MECHANIX ILLUSTRATED©

15c

November

TON PUBLIC LIBRARY
REFERENCE
2nd FLOOR
OCT 13 '49

Jet Pilots Fly In Bed—Page 70

ROCHESTER, N.Y.—GOLD RUSH CITY FOR INVENTORS

COMPLETE PLANS FOR A 35-MPH OUTBOARD RACEABOUT

Before anti-freeze goes in clean out rust and scum

Rust-clogged radiators waste anti-freeze ... cause trouble and expense

Clean out rust with

DU PONT COOLING SYSTEM CLEANSER

Don't put anti-freeze into a rust-clogged radiator. Clean out the rust, scale and scum *now* before winter sets in. Just pour a can of DU PONT CLEANSER into your radiator, run the engine for 30 minutes or more, then drain. That's all! It cleans thoroughly without reverse flushing. It's safe, sure, and easy to use.

Keep out rust with

DU PONT ACID AND RUST INHIBITOR

After cleaning out the radiator, you can keep it free from rust all season by pouring in a can of DU PONT ACID AND RUST INHIBITOR. It retards rust formation, and keeps out acid, too.

Avoid leaks and loss of anti-freeze

DU PONT COOLING SYSTEM SEALER

You can stop leaks quickly and securely—and help to prevent radiator leaks in the future—by pouring in DU PONT COOLING SYSTEM SEALER. It will not clog the radiator or harm hose or metal parts.

DU PONT

REG. U. S. PAT. OFF.

Better Things for Better Living ... *Through Chemistry*

Stand firmly on your own two feet!

That's what the trained man does when the boss calls him in. He has the answers . . . he knows what he's talking about . . . and the boss knows it, too.

It's the untrained, unprepared man who wriggles and twists . . . stands with one foot on the other . . . hems and haws . . . and drops in employer estimation every second.

I. C. S. training shows in your work. It's regularly called to your employer's attention in student progress reports from these schools. That's probably one reason why I. C. S. students get so much recognition in business and industry. An average of 125 letters a month reporting promotions and pay raises is proof of this recognition.

The coupon brings full information on practical, authoritative, low-cost I. C. S. training. Mark and mail it today. You can't afford to pass up this opportunity!

INTERNATIONAL CORRESPONDENCE SCHOOLS

APPROVED under the G.I. BILL

BOX 2321-V, SCRANTON 9, PENNA.

Without cost or obligation, please send me full particulars about the course BEFORE which I have marked X:

Business and Academic Courses
- ☐ Accounting ☐ Advertising
- ☐ App. Psychology ☐ Bookkeeping
- ☐ Business Administration
- ☐ Bus. Correspondence ☐ Bus. Law
- ☐ Certified Public Accounting
- ☐ Commercial
- ☐ Commercial Art
- ☐ Cost Accounting
- ☐ Federal Tax
- ☐ First Year College
- ☐ Foremanship ☐ French
- ☐ Good English ☐ High School
- ☐ Higher Mathematics ☐ Illustration
- ☐ Industrial Supervision
- ☐ Motor Traffic ☐ Postal Civil Service
- ☐ Retailing ☐ Retail Bus. Management
- ☐ Salesmanship ☐ Secretarial
- ☐ Sign Lettering ☐ Stenography
- ☐ Spanish ☐ Traffic Management

Air Conditioning and Plumbing Courses
- ☐ Air Conditioning
- ☐ Heating ☐ Plumbing
- ☐ Refrigeration ☐ Steam Fitting

Chemical Courses
- ☐ Chemical Engineering
- ☐ Chemistry, Analytical
- ☐ Chemistry, Industrial
- ☐ Chemistry, Mfg. Iron & Steel
- ☐ Petroleum Refining ☐ Plastics
- ☐ Pulp and Paper Making

Civil Engineering, Architectural and Mining Courses
- ☐ Architecture ☐ Architectural Drafting
- ☐ Building Estimating
- ☐ Civil Engineering ☐ Coal Mining
- ☐ Contracting and Building
- ☐ Highway Engineering
- ☐ Lumber Dealer
- ☐ Reading Structural Blueprints
- ☐ Sanitary Engineering
- ☐ Structural Drafting
- ☐ Structural Engineering
- ☐ Surveying and Mapping

Communications Courses
- ☐ Electronics
- ☐ Prac. FM and Television
- ☐ Prac. Telephony ☐ Radio Operating
- ☐ Radio, General ☐ Radio Servicing
- ☐ Telegraph Engineering

Electrical Courses
- ☐ Electrical Drafting
- ☐ Electrical Engineering
- ☐ Electric Light and Power
- ☐ Lighting Technician
- ☐ Practical Electrician
- ☐ Power House Electric
- ☐ Ship Electrician

Internal Combustion Engines Courses
- ☐ Auto Technician ☐ Aviation
- ☐ Diesel-Electric
- ☐ Diesel Engines ☐ Gas Engines

Mechanical Courses
- ☐ Aeronautical Engineer's, Jr.
- ☐ Aircraft Drafting ☐ Flight Engineer
- ☐ Forging ☐ Foundry Work
- ☐ Heat Treatment of Metals
- ☐ Industrial Engineering
- ☐ Industrial Instrumentation
- ☐ Industrial Metallurgy
- ☐ Machine Shop
- ☐ Machine Shop Inspection
- ☐ Mechanical Drafting
- ☐ Mechanical Engineering
- ☐ Mold-Loft Work
- ☐ Patternmaking—Wood, Metal
- ☐ Reading Shop Blueprints
- ☐ Sheet-Metal Drafting
- ☐ Sheet-Metal Worker ☐ Ship Drafting
- ☐ Ship Fitting ☐ Tool Designing
- ☐ Toolmaking ☐ Welding Engineering
- ☐ Welding—Gas and Electric

Railroad Courses
- ☐ Air Brake ☐ Car Inspector
- ☐ Diesel Locomotive
- ☐ Locomotive Engineer
- ☐ Locomotive Fireman
- ☐ Locomotive Machinist
- ☐ Railroad Section Foreman
- ☐ Steam and Diesel Loco. Eng.

Stationary Engineering Courses
- ☐ Boilermaking
- ☐ Combus. Engrg. ☐ Engine Running
- ☐ Marine Engineering
- ☐ Power Plant Engr. ☐ Steam Engineer

Textile Courses
- ☐ Cotton Manufacturing ☐ Loom Fixing
- ☐ Rayon Weaving ☐ Textile Designing
- ☐ Woolen Manufacturing

Name_____ Age_____ Home Address_____

City_____ State_____ Working Hours_____ A.M. to_____ P.M.

Present Position_____ Employed by_____

Length of Service in World War II_____

Enrollment under G.I. Bill approved for World War II Veterans. Special tuition rates to members of the Armed Forces.
Canadian residents send coupon to International Correspondence Schools Canadian, Ltd., Montreal, Canada.

752584

volume 42 number 1

mechanix illustrated

Title Registered U.S. Patent Office

november 1949

Cover painting by Reynold Brown

special features

Rochester, N. Y. Is Calling All Inventors .. 61
By Alfred Eris

Constantine—Woodcraftsman's Caterer . 66
By Ralph Coniston

This Month's Prize Gadget—Magnet Pencil 69

Jet Pilots Fly In Bed 70

Money-Making Idea—
My Business Is Cleaning Up 72
By Jack Robineau

First-Aid Booth 74

New For The Sportsman 75

Tunnel-Hull Boat Won't Roll 76

New In Science 78, 79

MI Tests The 1950 Studebaker 80
By Tom McCahill

MI Tests The Lea Francis 82
By Tom McCahill

New On The Road 84

Manhattan Game Warden 85

King Of The Underground 86
By George Scullin

Hobby Hall Of Fame—Dean Acheson 89

Invention Clinic 16

Editor's Workbench 28

Dear Editor 31

(continued on page 10)

A Fawcett Publication

Copyright 1949 by Fawcett Publications, Inc.

W. H. FAWCETT, Jr. . . . . President
ROGER FAWCETT . . . General Manager
RALPH DAIGH . . . . . Editorial Director
LEE WILSON . . . . Production Director

WILLIAM L. PARKER . . . . . Editor

FEATURE STAFF

GILBERT PAUST . . . . . Feature Editor
FRED HORSLEY . . . . . Science Editor
ARTHUR UNGER . . . . . News Editor

CRAFTS & HOBBIES STAFF

LARRY EISINGER . Crafts & Hobbies Editor
ROBERT BRIGHTMAN . Photography Editor
JOHN G. KINGDON . . . Boating Editor

ART STAFF

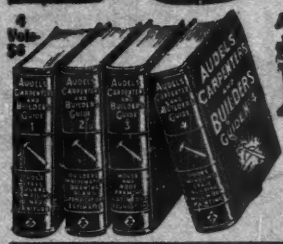
FRANK A. TAGGART . . . . . Art Editor
HAROLD E. KELLY . . . . . Art Associate
AL HEIGHINGTON . . . . . Art Associate

JEAN C. IRWIN . In Charge of Production

MECHANIX ILLUSTRATED is published monthly by Fawcett Publications, Inc., Fawcett Building, Fawcett Place, Greenwich, Conn. Printed in U.S.A. Editorial offices: 67 W. 44th St., New York 18, N. Y. Advertising offices: New York 18, 67 W. 44th St.; Chicago 11, 612 N. Michigan Ave.; Los Angeles 14, 643 S. Flower St.; San Francisco 4, 111 Sutter St. General Offices, Fawcett Building, Fawcett Place, Greenwich, Conn. Shepard Spink, Advertising Director; Roscoe K. Fawcett, Circulation Director; Gordon Fawcett, Treasurer; Al Allard, Art Director. Entered as second-class matter at the post office at Greenwich, Conn., under the act of March 3, 1879. Additional entry at Louisville, Ky. Copyright 1949 by Fawcett Publications, Inc. Reprinting in whole or in part forbidden except by permission of the publishers. Title registered in the U. S. Patent Office. Address manuscripts to MECHANIX ILLUSTRATED, 67 West 44th St., New York 18, N. Y. All remittances and correspondence concerning subscriptions as well as notification of change of address should be addressed to Circulation Department, Fawcett Building, Fawcett Place, Greenwich, Conn. Not responsible for lost manuscripts or photos. Unacceptable contributions will be returned, if accompanied by sufficient first class postage. Price 15c per copy. Subscription price $1.80 per year in Canada, the United States and possessions. Foreign subscriptions $2.55 per year. Foreign subscriptions and sales should be remitted by International Money Order in United States funds; payable at Greenwich, Conn. Advertising forms close fifth of second month preceding date of issue.

MEMBER AUDIT BUREAU OF CIRCULATIONS

BUILDERS TRADE GUIDES



AUDELS CARPENTERS AND BUILDERS GUIDES—4 VOLS. $6

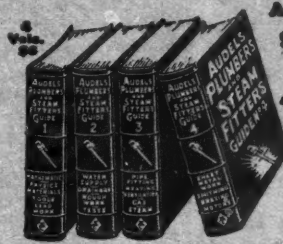
$1

Inside Information for Carpenters, Builders, Joiners, Building Mechanics—all Woodworkers. 1600 pages; 3700 diagrams; flexible; pocket size. Short-cut instructions, new methods, ideas, solutions, plans, systems—money saving suggestions. An easy progressive course for the apprentice. A practical daily helper and Quick Reference for the master worker. A Helping Hand to Easier and Better Work and Better Pay. To get this aid for yourself, simply fill in and mail the FREE COUPON below.

INSIDE TRADE INFORMATION ON:

How to use steel square; How to file and set saws; How to build furniture; How to use miter box; How to use chalk line; How to use rules; How to make joints; Carpenters' arithmetic; Mensuration problems; Estimating strength of timbers; How to set girders and sills; How to frame houses and roofs; How to estimate costs; How to build houses, barns, garages, bungalows, etc.; How to read and draw plans; Drawing up specifications; How to excavate; How to use settings 12, 13 and 17 on the steel square; How to build hoists and scaffolds—skylights; How to build stairs; How to put on interior trim; How to hang doors; How to lath—lay floors; How to paint.

"Audels Guides worth four times their price—handy too as I carry them in pocket for reference." W. J. Rehm, Kenosha, Wis.



AUDELS PLUMBERS AND STEAMFITTERS GUIDES—4 VOLS. $6

$1

A new edition—just out! A practical, illustrated, Reference Library and Study-Course for Master Plumbers, Journeymen and Apprentice Steamfitters, Gas Fitters and Helpers, Sheet Metal Workers, Draughtsmen, Master Builders, Engineers and all Building Trade Students. 1670 pages; 3642 diagrams; flexible; pocket size. Guides explain all the principles, advances and short cuts of the Plumbing and Heating trade. Contains instructions on how to figure and estimate jobs. Use FREE COUPON below to examine, without obligation, this valuable work.

INSIDE TRADE INFORMATION ON:

Air Conditioning. Soldering, tinning. Joint wiping, bending, beating. Pipe—iron—steel, threading. Mathematics, tables, physics. Materials — iron, steel, copper, brass, lead, tin, antimony. Sheet metal — galvanized—plate. Sanitation, syphonage, tanks. Drainage, sewage, purification. Fixtures—bath—kitchen. Pipe fittings, soil pipe, tools. Laying out work. Roughing. Screwed fittings, flanges, joints. Pipe bending, examples. Elbows. Heating, ventilation, refrigeration. Water supply, mains, wells, tanks. Gas-fittings. Underwriters. Sheet metal work, problems, methods, Brazing, heating, lead burning. Welding, various welds, methods. Blacksmithing, forges, tools.

"Audels Guides are practical, easy to understand, reliable. Cover the field in plain language." W. P. Armstrong, Annapolis, Md.

AUDELS MASONS AND BUILDERS GUIDES—4 VOLS. $6

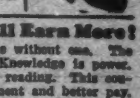
$1

A complete, illustrated trade reference library, for Bricklayers, Cement Workers, Plasterers, Tile Setters and Stone Masons, including a practical outline of Steel Construction. 1100 pages; 2667 diagrams; flexible; pocket size. A practical Trade Assistant explaining modern methods of masonry construction. Easy to understand and apply. A reliable and authentic reference work and study-course for Master Journeyman and Young Mechanic. Use FREE COUPON below and find out for yourself, without obligation, whether this set will benefit you.

INSIDE TRADE INFORMATION ON:

Bricklaying, tools, materials; Brick designs, patterns, bonds; Setting frames and foundations; Mortars, scaffolds, estimating; Mortars and mortar mixing; Tile setting, mosaic, hollow tile; Straight edge test, troweling; How to figure brick work; Safe loads, piers, chimneys; Boiler settings, anchors, fire stops; Labor tables; Concrete, forms; How to figure concrete work; Stucco—on old and new buildings; Plastering—wood lath—metal; Plasterers agreement; Plastering on various surfaces; Stone masonry; Cutting, finishing, estimating stone; Derricks, rigging; Steel construction; Fire proof; How to read blue prints.

"Audels Masons Guides are the best books on the subject. Have laid brick 15 years and unable to judge." R. A. Beaumont, Corliss, Pa.

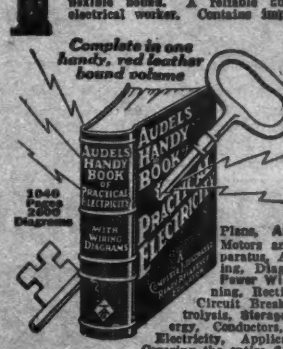


PRACTICAL ELECTRICITY—1 VOL. $4

$1

Audels Handy Book of Practical Electricity is a simplified Ready Reference and Study Course in one pocket size volume—for Engineers, Professional Electricians and Students. 1040 pages; 2500 diagrams; flexible bound. A reliable authority and handy helper for every electrical worker. Contains important and valuable wiring diagrams, calculations, machine sketches, helps on maintenance and repair. Use this FREE COUPON today and find out, without obligation, how this handy book will help you in your daily work.

Complete in one handy, red leather bound volume



INSIDE TRADE INFORMATION ON:

Electro-Therapeutics, X-Rays, Shocks, Welding, Brazing, Radio Hook-ups, Motion Pictures, Telephone, Telegraph, Cranes, Bells, Elevators, Pumps, Tools, Ship Drive, Railways, Vehicles, Automobile Electric Systems, Ignition, Generation, Lighting, Plant Management, Power Plans, Armature Winding, Repairing, A. C. Motors and Apparatus, D. C. Motors and Apparatus, Alternator Construction, Dynamos, Wiring, Diagrams, Sign Flashers, Cable Splicing, Power Wiring, Outside Wiring, Switches, Lightning, Rectifiers, Converters, Transformers, Fuses, Circuit Breakers, Rheostats, Electro Plating, Electrolysis, Storage Batteries, Magnetism, Electrical Energy, Conductors, Insulators, Static, Dynamic, Radio Electricity, Applications, Ready Reference and Index Covering the entire field of Modern Electricity.

Learn More and You Will Earn More!

Know your job and you'll never be without one. The skilled man is always in demand. Knowledge is power. Learn your trade thoroughly by easy reading. This coupon is your opportunity for advancement and better pay. You risk nothing in sending for Audels Guides for *free examination*. Send it NOW!

FREE EXAMINATION COUPON

THEO. AUDEL & CO.
49 W. 23 ST., NEW YORK CITY

Please mail me for free examination the books marked (x) below. If I find them satisfactory, I agree to mail $1 in 7 days, on each set ordered, and to further mail $1 monthly on each set until I have paid the purchase price.

☐ 4 CARPENTERS GUIDES $6 ☐ 4 PLUMBERS GUIDES $6

☐ 4 MASONS GUIDES $6 ☐ 1 ELECTRICIANS HANDY BOOK $4

NAME.....

ADDRESS.....

OCCUPATION.....

EMPLOYED BY.....MM

FREE
10-DAY EXAMINATION

2056 How-To-Do-It Pictures Simplify Every Step!

Now-

Home Repairs Made Easy

COMPLETE ILLUSTRATED GUIDE WITH 2056 EASY-TO-FOLLOW PICTURES

12 Books in 1

Covers everything from start to finish! 448 oversize pages—2056 crystal-clear pictures—quick, easy-to-find reference. Water-proof, grease-resistant, handsome lifetime binding. Mail coupon for FREE examination.

Carpentry, Woodworking: Here are all the basic techniques and tested methods of carpentry, woodworking and cabinet making—made easy as A-B-C to insure best results. How to cut, mark, saw, chisel, plane, bore, nail, glue, join, dowel, sand, finish. Hardware application, etc.

Electricity, Plumbing, Heating: Answers your every question about electricity, plumbing and heating systems. Explains all about care, installation, maintenance and repair, etc.

Interior Work, Exterior Work: Newest methods and short-cuts, eliminating leaks, applying wall-board, estimating materials, roofing, drainage systems, flashing, vents, gutters, downspouts, etc.

Painting, Paperhanging: Shows you how much paint to use for interior, exterior work. How to mix, apply, what brushes to use. How to estimate, cut and hang paper, etc.

Masonry, Concrete, Plastering: Practical facts about brick work, concrete, stucco, cement blocks, glass blocks. Describes all techniques, tools. How to prepare mixes, estimate needs. How to water-proof basement, repair cracks, lay bricks, etc.

SAVE MONEY!
Now—Fix Anything Like An Expert—But SAVE Expert's High Prices!

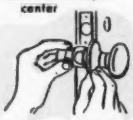
Pays For Itself Many Times Over

What's Your Home Repair Problem?

Find the answer in a jiffy in this greatest-of-all home guides! Below is just a partial list to show its completeness and wide scope.

WHAT TO DO WHEN . . .

lights go out
glass pane breaks
door lock sticks
roof leaks
plaster cracks
furnace smokes
flue backs up
pipes freeze
sink clogs
toilet backs up
plumbing knocks
wiring short circuits
toaster burns
vacuum cleaner doesn't pick up
doors swell
windows rattle
stairs squeak
shingles get loose
tiles break
termites attack
paint fails to dry
get house ready for winter or summer
build bookcases
make screens
cut, hang wallpaper
build home repair center



Whether it's fixing a lock or building a workshop here's all the latest dope.

paint over wallpaper
enlarge windows
clean discolored brick
make taller or smaller doorways
enlarge kitchen storage space
construct retaining wall

HOW TO . . .

convert attic
paint over wallpaper
enlarge windows
lengthen lamp cords
properly defrost
cut down fuel bills
read meters
change ice-box door gasket
install locks
add closet

Repair irons, toasters, vacuum cleaners easily and safely.

make door keys
lay linoleum
refinish floor
care for paint brushes
paint over chipped paint
shingle or reroof
weatherproof
repair gutters, downspouts
build cesspool

Entirely new from cover to cover. The greatest gold-mine of up-to-the-minute ideas, short-cuts, and professional secrets ever crammed into 1 giant volume of home repair. Mail coupon NOW!

Absolutely FREE

Just For Mailing Coupon Now

Home Repairs Made Easy!

Completely Different Illustrated Guide Shows Thousands of Ways to Save Money, Have Fun, Too! Everything Beginner or Expert Needs to Know!

NOW at last—you can fix anything you want in or around your home with unbelievable skill . . . even if you never used a hammer, paint-brush, or screwdriver in your life! Save hundreds of dollars! Have plenty of fun, too!

Here's your opportunity to get for FREE examination "Home Repairs Made Easy," the entirely different and useful guide that takes apart and simplifies every step from start-to-finish; 2056 "show-all," easy-to-follow pictures, including hundreds of vivid, crystal-clear 3-dimension drawings.

Must Be Seen To Be Appreciated

The detailed "how-to-do-it" pictures show you what to do and what not to do . . . exactly how to get started . . . what tools to use . . . how best to use them . . . how to plan and estimate every job . . . what steps to follow from very beginning to real professional finish.

Yes, you'll see that with this huge illustrated book as your expert guide and helper you need no technical knowledge, no special skills. Every simplified picture and direction in "Home Repairs Made Easy" has been fully tested by actual use.

There's nothing like it! Nothing has been left to chance. You can't possibly go wrong. And now for the first time, these proven professional methods, latest short-cuts, newest labor and material-saving ideas, and "tricks of the trade" are yours.

Save Hundreds Of Dollars Thousands Of Ways

Actually 12 books bound as one—this most complete, authoritative, and fully-illustrated encyclopedia covers everything you can think of—from fixing a dripping faucet to whitewashing a cellar—from making your own keys to installing a new heating system. Includes usual subjects in other "home repair" guides, as well as hundreds found in no other! "Home Repairs Made Easy" is so basic, so all-inclusive, so crammed with easy-to-do, money-saving ideas, practical suggestions, useful facts.

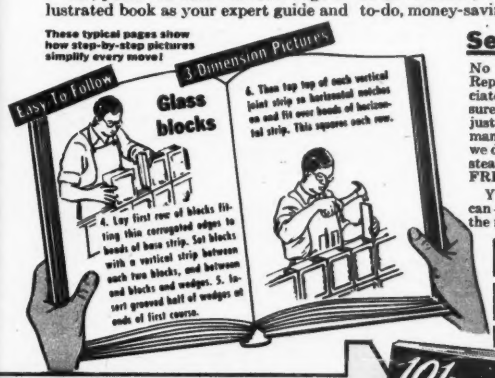
Now you too, can make your own screens, storm-windows, book-cases, etc. Save time, money, aggravation.

Imagine saving 90% on cost of papering a room or painting your home (inside or out)—insulating your home for just the price of materials—"doing over" your porch for less than $50 . . . fixing any plumbing or electrical appliances in a jiffy. You'll be surprised how simple all these repairs and alterations now are with the help of this step-by-step guide.

Once you go through "Home Repairs Made Easy"—packed with thousands of everyday facts, ideas and suggestions, you'll agree you wouldn't give it up for anything in the world.

But you must see it to appreciate its great and permanent value! That's why we offer to send it to you for FREE 10-day examination and use. There's no risk . . . no obligation! Send no money! Pay postman nothing! Just mail coupon NOW!

These typical pages show how step-by-step pictures simplify every move!



Send No Money! Pay Postman Nothing!

No one should be without "Home Repairs Made Easy." But to appreciate it you should go through it leisurely! Use it! See for yourself how just one answer can easily be worth many times its small cost. That's why we don't ask you to buy this book. Instead, let us send it to you for 10 days' FREE EXAMINATION!

You'll be surprised at the things you can do with its help . . . thrilled at all the money you can save . . . delighted with the fun you get. If not, return within 10 days. In that event, pay nothing—owe nothing! But if you agree you can't afford to be without it, send only $2.95 (plus few cents postage and handling); then 2 monthly payments of $2 until bargain price of $6.95 is paid in full.

MAIL COUPON NOW! Send no money . . . pay postman nothing! Just mail coupon for your 10-day FREE examination.

NELSON DOUBLEDAY, INC.
DEPT. MI-11, GARDEN CITY, N. Y.

MAIL NOW!

Send me immediately for 10 days' FREE examination "HOME REPAIRS MADE EASY"—without obligation. If I return it within 10 days—I owe nothing.

If I keep it, I then pay only $2.95 (plus few cents postage and handling), and 2 monthly payments of $2 until bargain price of only $6.95 is paid in full.

▶ Also ship at once ABSOLUTELY FREE, 179-Page Book "101 Ways To Increase The Value of Your Home," which I keep as a gift, even if I don't keep "Home Repairs Made Easy."

Name_____

Address_____

City_____ State_____

IN CANADA: 105 Bond Street, Toronto.

Ideas Galore To Add Charm To Your Home

Let us send you as your FREE GIFT this wonderful idea-book—full of the smartest, thriftiest ways to make your home more valuable . . . more saleable . . . more livable! Suggests and illustrates 101 ways to improve your home—things you can do yourself—or have done by others. For example, how to modernize bathroom or kitchen; add closet space; camouflage radiators; make built-in cabinets and book-shelves, etc.

Reg. Price $1

179 Pages! Just Off the Press!

Now *YOU-TOO*-Can Be a "WHIZ" on ANY AUTO REPAIR JOB!

Free
7-DAY OFFER!

"MoToR's Manual paid for itself on the first two jobs and saved me valuable time by eliminating 'guess work.'" — WILSON J. SCHROF Akron, Ohio

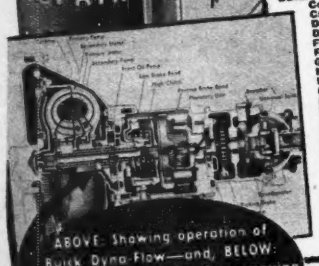
"Fixed motor another mechanic had worked on half a day. With your Manual I did it in 30 minutes." — CURTIS AUBERRY, Murfreesboro, Tenn.

"I have done jobs with this Manual that I would not have attempted without it." — C. L. VANERSTROM, Hazel Park, Mich.

Used by U. S. Army and Navy

COVERS ANY CAR BUILT SINCE 1935!

Auburn, Austin, Buick, Cadillac, Chevrolet, Chrysler, Cord, Crosley, De Soto, Dodge, Ford, Frazer, Graham, Hudson, Hupmobile, Kaiser, Lafayette, La Salle, Lincoln, Mercury, Oldsmobile, Nash, Packard, Pierce Arrow, Plymouth, Pontiac, Reo, Studebaker, Terraplane, Willys



ABOVE: Showing operation of Buick Dyna-Flow—and, BELOW: How to adjust Ford Clutch. Every moving part is covered in simple words and BIG, CLEAR Pictures.

HERE'S the book YOU need to "whiz through" *any* repair job on *any* car built from 1935 thru 1949—including those "ornery" extra-hard jobs that give other mechanics such a headache.

THOUSANDS of men like the three above are letting MoToR's ***brand-new*** *AUTO REPAIR MANUAL* help them "lick" even the toughest repair problems — in LESS TIME, with LESS work and MORE profits!

Complete "How-To-Do-It"

Now let these 200,000 factory-correct instructions and facts, 2100 "how-to-do-it" pictures, 200 "quick-check" charts and tables, go to work for YOU! With them you can repair anything from carburetor to rear end, Ford or Cadillac, shaky '35 model to shining '49—quickly, easily, right!

Just look up make, model, job in quick index; then let official step-by-step instructions, "boiled down" from 150 auto manufacturers' factory shop manuals, show you how! Sturdy binding, 8½ x 11 inches, 795 big pages.

SEND NO MONEY

Find out for yourself How this book can pay for itself first few days you use it. Try it FREE 7 days! Just mail coupon. Pay postman nothing. *Put Manual to actual test.* Then if not entirely satisfied with it, return book in 7 days, pay nothing. Mail coupon today! MoToR Book Dept., Desk 311, 250 West 55th Street, New York 19, N. Y.

Same FREE Offer on MoToR's TRUCK MANUAL

Covers EVERY job on EVERY truck made from 1936 thru 1946! 1400 pictures, 952 pages, 300,000 facts. All types Gasoline Engines, Truck Diesels, Hesselmans, Fuel Systems, Governors, Lubrication, Ignition, Starters, Clutches, Axles, Brakes, etc., etc.

ALSO covers many buses, tractors, contractor and road building equipment, stationary power machinery. Check box in coupon.

MAIL COUPON NOW FOR 7-DAY FREE TRIAL

MoToR BOOK DEPT.
Desk 311, 250 W. 55th St., New York 19, N.Y.

Rush to me at once (check box opposite book you want):

☐ **MoToR's New AUTO REPAIR MANUAL.** If O.K., I will remit $1 in 7 days (plus 35c delivery charges), $2 monthly for 2 months and a final payment of 95c one month after that. Otherwise I will return the book postpaid in 7 days. *(Foreign price, remit $8 cash with order.)*

☐ **MoToR's TRUCK REPAIR MANUAL.** (Described at left.) If O.K., I will remit $2 in 7 days, and $2 monthly for 2 months, plus 35c delivery charges with final payment. Otherwise I will return book postpaid in 7 days. *(Foreign price, remit $10 cash with order.)*

Print Name..... Age.....

Print Address .....

City..... State.....

☐ **Check box and save 35c delivery charge by enclosing WITH coupon entire payment of $5.95 for Auto Repair Manual (or $8 for Truck Repair Manual). Same 7-day return-refund privilege applies.**

MoToR

Published by MoToR, The Leading Automotive Business Magazine

Get Into TELEVISION, RADIO and ELECTRONICS Master ALL Phases

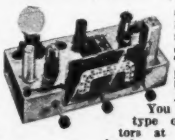
Get Complete Training. You Receive and Keep All Equipment, Parts and Lessons. No Extra Charges.

You receive complete standard equipment, including latest type High-Mu Tubes, for building various experimental and test units. You progress step by step until you build a complete Superheterodyne Receiver. It is yours to use and keep.

YOU RECEIVE THIS PROFESSIONAL MULTITESTER!

You will use this professional instrument to locate trouble or make delicate adjustments—at home—on service calls. You will be proud to own this valuable equipment. Complete with test leads.

SIGNAL GENERATOR



You construct the Transitron Signal Generator shown here, demonstrating Transitron principles in both R.F. and A.F. stages. You study negative type oscillators at first-hand.

AUDIO OSCILLATOR:

An electronic device, which produces audio-frequency signals for modulating R.F. (radio frequency) carrier waves, testing A.F. (audio frequency) amplifiers, speakers, etc.

T.R.F. RECEIVER

You build several T.R.F. Receivers, one of which, a 4-tube set, is shown here. You learn construction, alignment, make receiver tests, and do trouble shooting.

GOOD PAY and Unlimited Opportunities in JOBS LIKE THESE:

Business of Your Own
Radio Manufacturing, Sales, Service
Broadcasting Telecasting
Television Manufacturing, Sales, Service
Laboratories: Installation, Maintenance of Electronic Equipment, Electrolysis, Call Systems
Garages: Auto Radio Sales, Service
Sound Systems and Telephone Companies; Oil Well and Drilling Companies; Engineering Firms
Theatre Sound Systems Police Radio
And scores of other good jobs in many related fields

YOU CONDUCT MANY EXPERIMENTS LIKE THESE!

Checking action of condensers
Experiments with AF and RF amplifiers
Experiments with resonance
Producing beat frequencies
Calibrating oscillators
Experiments with diode, grid-bias, grid-leak and infinite impedance detectors
Practical experience in receiver trouble shooting
Application of visual tester in checking parts and circuits
Experiments with audio oscillators
Advanced trouble-shooting
. . . and many, many others

Complete Training by Practical Resident Trade School, Est. 1905

The same highly trained faculty, instruction materials and methods used here in our large, modern resident school, are adapted to your training *in your own home.* Shop Method Home Training has been proved by hundreds of successful graduates.

Both Resident and Home Study Courses Offered

YOU LEARN BY DOING

You receive special laboratory experiment lessons to show you how to build with your own hands various experimental units such as those shown at left, and how to conduct many tests.

You will find all lessons easy to understand because they are illustrated throughout with clear diagrams and step-by-step examples that you work out yourself. Every piece of the equipment and complete lesson material we send you is yours to keep and enjoy, including the multitester, experimental equipment, all parts of the Superheterodyne, tube manual, radio dictionary, and complete, modern Television texts. All parts are standard equipment.

Shop Method Home Training . . . Earn While You Learn

With our practical resident Shop Method Home Training, you study in your spare time. You receive Spare Time Work Lessons, which show you how to earn while you learn. Service neighbors' radios and TV receivers, appliances, etc., for extra money and experience. Many National students pay all or part of their training with spare time earnings!

DON'T DELAY! The Radio-Television Industry needs trained men NOW!

APPROVED FOR VETERANS! Check coupon below!

For quick action, mail coupon today and we'll rush you full information.

Free! NEW, ILLUSTRATED OPPORTUNITY BOOK AND SAMPLE LESSON SHOW YOU HOW WE TRAIN YOU . . . SEND FOR THEM TODAY! NO COST. NO OBLIGATION.

NATIONAL SCHOOLS
LOS ANGELES 37, CALIF. • EST. 1905

FIND OUT NOW . MAIL COUPON TODAY

National Schools, Dept. 11-MI
4000 South Figueroa Street
Los Angeles 37, California

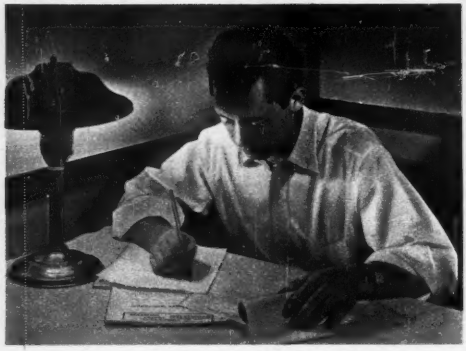
Mail in envelope or paste on penny postal.

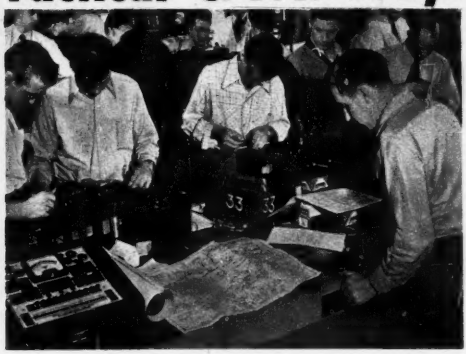
Send me your FREE book "Your Future in Radio" and the sample lesson of your course. I understand no salesman will call on me.

NAME _____ AGE _____
ADDRESS _____
CITY _____ ZONE _____ STATE _____

☐ Check here if Veteran of World War II

Learn a Trade this Practical C.T.I. Way!





1. TRAIN AT HOME IN SPARE TIME!

C.T.I.'s Shop-Proved Home Study training methods advance you in easy stages. You achieve technical knowledge, build a firm foundation for future success.

2. GET REAL EXPERIENCE IN C.T.I. SHOPS

Upon completion of the majority of C.T.I. Home Study courses, you are entitled to four additional weeks of training in the modern C.T.I. shops in Chicago—under expert supervision.

FOR THE MAN IN A HURRY TO GET AHEAD—C.T.I.!

R. C. Anderson
President

Why grumble over a job you don't like, or work at wages that barely meet expenses, when you can learn a good trade? Promote yourself into a good job, or strike out on your own, by acquiring technical knowledge and skill—just as a great many C.T.I. graduates have done! Listen to 'em talk:

"I have done a lot of things in my life, but the smartest and biggest step toward success was taking a C.T.I. course." . . . "Since I completed training at C.T.I., I have made a considerable amount of money. C.T.I. teaches trades that pay top wages and that bring independence." . . . "Training at C.T.I. was the most profitable decision I ever made. Since I graduated, I have built a garage, bought the most important equipment, and have a waiting list of customers." . . . "Even before I completed my C.T.I. course, I was promoted to plant foreman. Since then I've had three raises." . . .

"I plan to enter business with my brother. Your methods of explaining the most difficult problems in the simplest way possible are to be praised." . . . "I received two promotions since starting my C.T.I. Home Study training." . . . "Through the efforts of C.T.I., I received a job that I like very much."

These letters prove that opportunities in industry are waiting for men who are qualified to take advantage of them. Your next step—if you want to succeed—is to fill out and mail the coupon. Do this today.

FILL OUT - CUT OUT - MAIL TODAY

Mr. R. C. Anderson, President
COMMERCIAL TRADES INSTITUTE, Dept. E3-11
1400 W. Greenleaf, Chicago 26, Ill.

Send free illustrated Brochures and other information about the field I have checked below:

☐ Veteran ☐ Non-Veteran

☐ Automotive Mechanics
☐ Body & Fender Rebuilding
☐ Diesel Mechanics
☐ Refrigeration & Air Conditioning
☐ Electricity & Electronics
☐ Radio & Television
☐ Building Construction
☐ Mechanical Drafting

Name_____ Age_____
Address_____
City_____ State_____

C.T.I. TRAINING IS G. I. APPROVED

All C.T.I. courses, both residential and home study, are fully approved by the Veterans Administration—which means that eligible veterans will have their tuition paid by the government. Remember, there's a time limit on when training must begin, so act now!

NON-VETERANS—We'd like to tell you about our Easy-Payment Finance Plan and Pay-After-Graduation Plan. Write for information.

C.T.I. OFFERS PRACTICAL TRAINING IN

- AUTOMOTIVE MECHANICS
- BODY & FENDER REBUILDING
- DIESEL MECHANICS
- REFRIGERATION & AIR CONDITIONING
- ELECTRICITY & ELECTRONICS
- RADIO & TELEVISION
- BUILDING CONSTRUCTION
- MECHANICAL DRAFTING

COMMERCIAL TRADES INSTITUTE, Dept. E3-11
1400 Greenleaf, Chicago 26

Amazing New LOW PRICED Electric Sprayer For Home Use Makes Painting Easy!

SAVE MONEY, TIME, WORK! GET PROFESSIONAL SPRAYING RESULTS!

- Paint Floors, Ceilings, Walls, Woodwork, Furniture, Toys
- Enamel Auto Bodies and Fenders, Storm Windows, Screens
- Varnish Table Tops, Linoleum
- Spray Moth-Proofing Liquid in Closets and Attics
- Spray Flit or Other Insect and Pest Solutions
- Spray Insecticides on Flowers, Plants, Shrubs
- USE VIBRO SPRAYER for EVERY Job of Painting and Spraying in and Around the Home
- Self-Contained Unit—No Motor, No Compressor, Produces Equivalent of 40 lbs. Pressure!

weighs only 2½ lbs.

Sizes Paint Jar Holds 25 Ounces. It Strikes Use Any Standard Mason Jar.

FREE 10 DAY TRIAL IN YOUR OWN HOME!

Just Plug in—Pull the Trigger and Paint or Spray!

Yes, now you can do a *professional painting* job on everything in and around your house with this amazing, brand new, self-contained electric paint sprayer. Just fill the big, 25-ounce capacity, interchangeable mason jar with any kind of ordinary oil-base liquid—lacquer, glossy paint, enamel, varnish, shellac, residual type insecticides, light oils, moth sprays, disinfectants, etc. Then plug the 8-ft. insulated cord into any 110-volt A.C. household outlet—pull the trigger—and get satin-smooth, professional results *every time!*

HOUSEHOLD ITEMS — It's easy to paint clothes hampers, kitchen chairs, shelving, partitions, old fence, metal trash drums, etc., with Vibro-Sprayer!

OUTDOOR FURNITURE — Just the thing for painting rustic chairs, reed furniture, brickwork, boats, wagons, and other equipment!

ROUGH SURFACES — Makes quick work of painting concrete, rough wood or window screening!

INSECT CONTROL — Effectively aids extermination of roaches, waterbugs, flies, mosquitoes and other pests. Fine for mothproofing clothes!

AUTOMOBILE MAINTENANCE — Provides the answer to quick, smooth touch-up work on fenders and body. Sprays light oils for under-chassis lubrication.

GARDEN PEST CONTROL — Ideal for spraying insecticides and fungicides on flowers, plants and shrubs.

SAVE MONEY, TIME AND WORK

VIBRO-SPRAYER paints twice as fast as a brush, saves strain, fatigue, backache and sore muscles. Paint goes on FASTER, SMOOTHER and far more EASILY than with a brush. Adjustable spray control allows wide or narrow spray, thick or fine, as the job requires. Spray radius is always under complete control. VIBRO-SPRAYER cannot clog or drip—and is amazingly simple to clean. What's more, VIBRO-SPRAYER is SAFE! Will never break in use as there is NO pressure in the jar.

COSTS LESS THAN A GOOD BRUSH

Not only does VIBRO-SPRAYER paint faster, smoother, more easily than a good brush, but it actually costs less! And because VIBRO-SPRAYER applies paint more evenly and uniformly, you use LESS PAINT—save the cost of the sprayer in just a few months! In addition, VIBRO-SPRAYER shoots a fine, even spray into deep crevices where ordinary paint brushes can't reach, makes short work of rough or pebbled surfaces that are so difficult to brush.

MADE BY A FAMOUS COMPANY

VIBRO-SPRAYER is manufactured by the world-famous Burgess Battery Company, makers of handicraft items and flashlight batteries. Every VIBRO-SPRAYER is guaranteed by the manufacturer to be free of mechanical defects. In addition, we guarantee that VIBRO-SPRAYER will give you exactly the professional, fast, labor and money saving results you desire, or you may return your sprayer within 10 days for full purchase price refund. You get FULL PROTECTION under this DOUBLE GUARANTEE!

SEND NO MONEY

Send only the coupon, now. When your VIBRO-SPRAYER arrives, pay the postman only $12.95 plus small delivery charge—or enclose full payment now and we pay all delivery charges. In either case you are fully protected by the manufacturer's guarantee of mechanical perfection, and our guarantee of complete satisfaction, or return your VIBRO-SPRAYER within 10 days for full purchase price refund. Send the coupon AT ONCE!

FOSTER PRODUCTS, INC.
179 Wooster St., New York 12, N.Y.

Comes Complete—All Ready to Use—No Extras to Buy!

VIBRO-SPRAYER is completely self-contained — the ONLY unit of its kind on the market. Nothing else to buy, no hose, compressor, motor, tank, etc. Just pour liquid into paint jar, (25 ounce capacity) plug in and press the trigger! Size 8⅜" high, 6½" deep, 4" wide. Works on activated piston and suction principle. Built like professional equipment — does the work of a $100.00 unit producing 40 lbs. pressure!

ONLY **$12.95**

FREE TRIAL COUPON—MAIL NOW!

FOSTER PRODUCTS, INC.,
Dept. SG-234
179 Wooster St., N. Y. 12, N. Y.

Please send me a VIBRO-SPRAYER for 10 days no-risk examination. On arrival I will pay the postman only $12.95 plus small delivery and handling charge.

☐ Check here if you enclose $12.95 now. We pay all delivery and handling charges.

Name.....

Address.....

City.....Zone.....State.....

NOTE: Whether you order C.O.D., or prepaid, you receive the full protection of our GUARANTEE of satisfaction or money back!

NEW!

a different name for your old friends!

PROTO TOOLS

—formerly

PLOMB TOOLS

1ST IN THE PROFESSIONAL TOOL PARADE

Remember,
PROTO is now the name for the leading brand of mechanics' hand tools. PROTO tools—formerly Plomb tools—are manufactured to the same high standards and are noted for superior design, special steels, scientific heat treating and long life. For the finest tools, buy the old-timers with the new name—PROTO tools.

Write for catalog to

PLOMB TOOL COMPANY

2256K Santa Fe Avenue, Los Angeles 54, Calif.

4983

PROTO
Professional Quality
TOOLS
LOS ANGELES

CRAFTS and HOBBIES

Contents continued from page 2

Workbench Award Winners 90

Eight-foot Play Slide 92

Bronzing Baby's Shoes 94

Car Care 98

Behind The Wheel 99

Control-line Curtiss P-6E Model ... 100

The Music Goes Round And Round . 106

Shop Safety 108

Arrow—A 13-ft. Outboard Runabout 112

Pour Your Own Driveway 116

Monthly Photo Contest 120

Tripod Tips 121

MI. Static Eliminator 122

Kinks For The Photo Fan 124

Try Photo Sketching 127

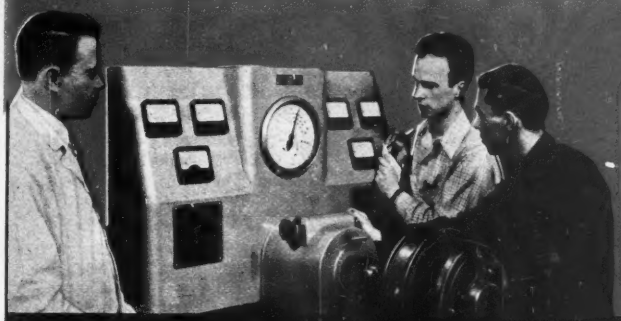
Car Kinks 129

Telescope Page 134

THESE MEN ARE GETTING PRACTICAL TRAINING

IN ELECTRICITY

On Real:



A.C. and D.C. MOTORS
GENERATORS
SWITCHBOARDS
CONTROLLERS
WIRING JOBS
APPLIANCES
ELECTRONIC UNITS

(Shown at left—Instructor demonstrating latest type of Test Unit for checking the efficiency of a Motor.

AND RADIO-TELEVISION

On Real:

TELEVISION SETS
RADIO RECEIVERS
F.M. (Frequency Modulation)
RECORD CHANGERS
AUTO RADIOS
AIRPLANE RADIOS
PUBLIC ADDRESS Systems

(Right — Instructor explaining operation of 20-inch Cathode Ray tube used in Dumont Television Set.)

Just Like YOU Can Get in the Great SHOPS OF COYNE

Prepare NOW for a real future the quick, practical way. Come to the Great Shops of COYNE in Chicago. Largest and best equipped school of its kind—now celebrating our 50th Anniversary. GI approved. Finance plan for non-veterans. **Mail coupon.**

NOT "HOME-STUDY" COURSES! At **Coyne** you learn on real, full-size equipment. Trained instructors show you how, then you do typical jobs yourself. We don't teach by mail.

CLIP COUPON NOW for big new illustrated **Coyne** book on either ELECTRICITY or RADIO-TELEVISION or both. No obligation; no salesman will call. Get the facts now!

COYNE

B. W. COOKE, Pres.
ELECTRICAL & RADIO SCHOOL
500 S. Paulina St., Dept. 89-53H
Chicago 12, Ill.

Mail Coupon for FREE BOOKS!

COYNE 50th ANNIVERSARY

B. W. COOKE, President
COYNE ELECTRICAL & RADIO SCHOOL, Dept. 89-53H
500 S. Paulina St., Chicago 12, Ill.

Send FREE, the book checked below, and details of your training offer. This does not obligate me and no salesman will call.

☐ ELECTRICITY ☐ RADIO-TELEVISION

NAME .....

ADDRESS .....

CITY ..... STATE .....

You Can Influence Others With Your Thinking!

TRY IT SOME TIME. Concentrate intently upon another person seated in a room with you, without his noticing it. Observe him gradually become restless and finally turn and look in your direction. Simple—yet it is a *positive demonstration* that thought generates a mental energy which can be projected from your mind to the consciousness of another. Do you realize how much of your success and happiness in life depend upon your influencing others? Is it not important to you to have others understand your point of view—to be receptive to your proposals?

Demonstrable Facts

How many times have you wished there were some way you could impress another favorably—*get across to him or her your ideas*? That thoughts can be transmitted, received, and understood by others is now scientifically demonstrable. The tales of miraculous accomplishments of mind by the ancients are now known to be fact—not fable. The method whereby these things can be *intentionally*, not accidentally, accomplished has been a secret long cherished by the Rosicrucians—one of the schools of ancient wisdom existing throughout the world. To thousands everywhere, for centuries, the Rosicrucians have privately taught this nearly-lost art of the practical use of mind power.

This *Free* Book Points Out the Way

The Rosicrucians (not a religious organization) invite you to explore the powers of your mind. Their sensible, simple suggestions have caused intelligent men and women to soar to new heights of accomplishment. *They will show* you how to use your natural forces and talents to do things you now think are beyond your ability. *Use the coupon below* and send for a copy of the fascinating sealed *free* book, "The Mastery of Life," which explains how you may receive this unique wisdom and benefit by its application to your daily affairs.

The ROSICRUCIANS
(AMORC)

Scribe M.C.F. The Rosicrucians, AMORC, Rosicrucian Park, San Jose, California.

Kindly send me a free copy of the book, "The Mastery of Life." I am interested in learning how I may receive instructions about the full use of my natural powers.

Name.....

Address.....State.....

INVENTORS

Learn how to protect your invention. The U. S. Patent Laws provide that any new and useful art, machine, article of manufacture, or composition of matter, or any new and useful improvement thereof, may be patented if the act of invention is involved. Therefore, every inventor with a valuable invention should take advantage of the Patent Laws and proceed for patent protection in order to safeguard his rights.

A patent gives the inventor the exclusive right to prevent others from making, using, or selling the invention claimed in the patent for a period of seventeen years.

The Patent Laws were enacted for the benefit of the inventor to give him protection for the features of his invention which are patentable. These features must be properly and concisely set forth and claimed in a formal application for patent, in order to comply with the requirements of the Patent Laws. For that reason, unless the inventor is familiar with patent matters, he should engage a competent registered patent attorney or agent to represent him. We are registered to practice before the U. S. Patent Office and are prepared to serve you in the handling of your patent matters.

A specially prepared booklet entitled "Patent Guide for the Inventor", containing detailed information with respect to patent protection and procedure, together with a "Record of Invention" form will be promptly forwarded to you without obligation upon request.

CLARENCE A. O'BRIEN & HARVEY JACOBSON

Registered Patent Attorneys

93-L DISTRICT NATIONAL BUILDING • WASHINGTON 5, D. C.

Patents

Trademarks

Copyrights

CLARENCE A. O'BRIEN & HARVEY JACOBSON
Registered Patent Attorneys
93-L District National Bldg., Washington 5, D. C.
Please send me copy of "Patent Guide for the Inventor" and also "Record of Invention" form. This request does not obligate me.

Name_____

Address_____

City_____ State_____
(Please write or print plainly.)

YOU can acquire

LAW NIGHTS AT HOME! L.L.B. DEGREE

LaSalle's famous Law Library—used as reference in many Law libraries and Law offices—has enabled thousands to master Law surprisingly fast, in spare hours at home, for business and professional advancement.

These 14 remarkable volumes, compiled by leading professors and lawyers, cover the whole basic field of Law in condensed, orderly, simplified manner.

You advance rapidly with this great library, plus special lectures furnished. We guide you step-by-step with personalized Problem Method of instruction . . . you *learn by doing*—handling legal problems—not by memorising rules.

Send for two FREE 48-page booklets, "Law Training for Leadership," and "Evidence," answering questions about Law and its value to you, and telling how LaSalle Law graduates are winning rapid advancement in business and public life. Mail coupon below. No obligation.

LA SALLE EXTENSION UNIVERSITY
A Correspondence Institution
417 S. Dearborn St., Dept.11493-L, Chicago 5, Ill.

Send me your two FREE booklets described above, without obligation.

*Name*_____ *Age*_____

*Street*_____

*City, Zone & State*_____

BUILD YOUR OWN TELEVISION SET

Only $59.50 Basic 7" Kit

It's Easy! You don't have to know radio to build this fine Telekit. All you need is a soldering iron, pliers and screw driver. Photos and diagrams in new 54 page illustrated instruction book show you each step of the way.

Over 30,000 Telekits have been assembled. Pictures are bright and clear. Superior to sets costing much more.

Own a television business of your own. Sell these kits to neighbors and friends. Make over $100 a week in your spare time. Write for confidential prices for dealers and Telekit builders on kits, tubes, and cabinets.

GUARANTEED. Unusual factory service plan GUARANTEES GOOD PERFORMANCE. Write for FREE booklet with complete details.

ELECTRO-TECHNICAL INDUSTRIES
1432 N. BROAD ST. DEPT. A PHILA. 28, PA.

Career Training in a Minimum of Time

RADIO—ELECTRONICS TELEVISION ENGINEERING

GRADUATES of CREI residence school are preferred by industry because of their *training* and *ability*. CREI prepares the young man for a good job in industry in a minimum of time. 22 years practical experience. CREI offers an outstanding faculty, modern laboratories, shops and equipment. New students accepted twice monthly and each may advance as rapidly as he is capable. Basic course with one specialized course requires an average of 20 months to complete.

Approved for Veteran's Training.

• *Write for Details and Free Catalog*

CAPITOL RADIO ENGINEERING INSTITUTE
Dept. 1911-A, 5th & Park Rd. N.W.
Washington 10, D.C.

SEND FOR THIS **FREE!**

Make money. Know how to break and train horses. *Write today for this book FREE*, together with special offer of a course in Animal Breeding. If you are interested in Gaiting and Riding the saddle horse, check here ( ) *Do it today—now.*

BEERY SCHOOL OF HORSEMANSHIP
Dept. 11511-D Pleasant Hill, Ohio

STUDY ENGINEERING AT HOME

With An Educational Institution

Courses in ENGINEERING: Electrical, Civil, Mechanical, Drafting, Architectural, Automotive, Steam, Diesel, Aeronautical, Radio, Structural, Mining, Industrial, Petroleum, Marine, Refrigeration, Air Conditioning, Chemical.

Courses in ARTS AND SCIENCES: Philosophy; Education; Letters; Public Health; Medical Jurisprudence; Psychology; Sociology; Physics; Chemistry; Geology; Pol. Science; Theology; Law; Business and Commerce; Accounting; Mathematics; Statistics; Agriculture.

McKinley-Roosevelt Incorporated, 4610-DC, Sheridan Rd., Chicago 40, Illinois

Learn PHOTOGRAPHY at Home

Splendid Hobby or Vocation

Prepare in spare time. Practical basic training. Long-established school. Send for free booklet, "Opportunities in Modern Photography" and particulars. Sent postage prepaid. No obligation.

AMERICAN SCHOOL OF PHOTOGRAPHY
1315 S. Michigan Avenue, Dept. 2058 Chicago 5, Illinois

START YOUR OWN MONEY-MAKING BUSINESS

Clean upholstered furniture on customers' premises with highly efficient electric machine which is making BIG MONEY for others. No special skill or experience required. No shop necessary. No hauling costs. Write today for complete FREE information. Address:

VON SCHRADER MFG. CO., 42P Pl., RACINE, WIS.

INVENTORS

Patent laws encourage the development of inventions.

We recommend that an inventor employ a registered Patent Attorney or agent, if the inventor is not familiar with patent matters. This is because the value of a patent depends largely upon the skillful preparation of the specification and claims in the patent application.

The firm of McMorrow, Berman and Davidson is registered to practice before the United States Patent Office. Additionally it engages patent attorneys able to readily understand inventors' disclosures, to advise concerning patentability, and to prepare appropriate specifications and claims.

If an inventor believes he has an invention, a search of the most pertinent prior U. S. patents should be made and a report obtained relative to its patentability. Where such report indicates that the invention appears patentable, in order to secure protection, diligence should be exercised in making application for a patent.

Send for a copy of Patent Booklet entitled "How To Protect Your Invention." This booklet contains information on patent protection and procedure. You will also receive an "Invention Record" blank. This will be promptly forwarded to you upon request—no obligation.

McMORROW, BERMAN & DAVIDSON

Registered Patent Attorneys

PATENTS • TRADE MARKS • COPYRIGHTS

1395 VICTOR BUILDING, WASHINGTON 1, D. C.

McMORROW, BERMAN & DAVIDSON

Registered Patent Attorneys

1395 Victor Building, Washington 1, D. C.

Send me your Patent Booklet, "How To Protect Your Invention", and also "Invention Record" form at once. I understand this request does not obligate me.

Name.....

Address.....

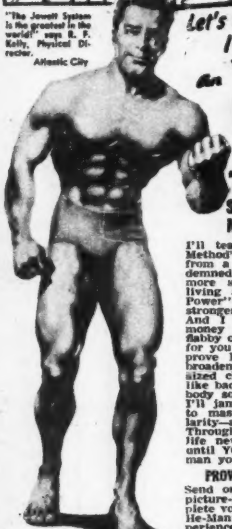
City.....

(WRITE OR PRINT NAME CLEARLY)

BE A WINNER AT ANYTHING YOU TACKLE WITH PROGRESSIVE POWER

Amazing get-acquainted offer Yours for only **10c** instead of $1 for all 5 courses

"The Jowett System is the greatest in the world" says R. F. Kelly, Physical Director, Atlantic City



Let's Go, Pal! I'll prove I can make YOU an "ALL-AROUND" HE-MAN

Fast—or No Cost! says George F. Jowett, World's Greatest Body Builder

Enjoy My "Progressive Power" Strength Secrets! Give Me 10 Easy Minutes A Day—Without Strain!

I'll teach you the "Progressive Power Method" through which I rebuilt myself from a physical wreck the doctors condemned to die at 15, to the holder of more strength records than any other living athlete or teacher! "Progressive Power" has proven its ability to build the strongest, handsomest men in the world. And I stand ready to show you on a money back basis—that no matter how flabby or puny you are I can do the same for you right in your own home. Let me prove I can add inches to your arms, broaden your shoulders, give you a massized chest, powerful legs and a Rock-like back—in fact, power pack your whole body so quickly it will amaze you! Yes, I'll jam you with power and confidence to master any situation—to win popularity—and to get ahead on the job! Through my proven secrets I bring to life new power in you inside and out, until YOU are fully satisfied you are the man you want to be.

PROVE IT TO YOURSELF IN ONE NIGHT

Send only 10c for my 5 easy-to-follow, picture-packed courses now in 1 complete volume "How to Become a Muscular He-Man." Try it for one night! Experience the thrilling strength that surges through your muscles.

George F. Jowett

Whom experts call "Champion of Champions" • World's wrestling and weight lifting champ at 17 and 19 • World's Strongest Arms • 4 times World's Perfect Body—plus other records!

I am making a drive for thousands of new friends fast—REGARDLESS OF COST!

SO GET NOW MY 5 Muscle Building COURSES (Valued at $5 each)

All in 1 Great Complete Volume Packed With How-To-Do-It Pictures!

Now, this "get-acquainted," extremely low price of only 10c is your chance to build a body you'll be proud of! Follow Jowett's easy method of muscle building NOW! For Only **10c**

10-DAY TRIAL! Think of it—all five of these famous courses now in one picture-packed muscle building volume for only 10c. If you don't actually FEEL results within ONE WEEK send it back and your money will be promptly refunded!

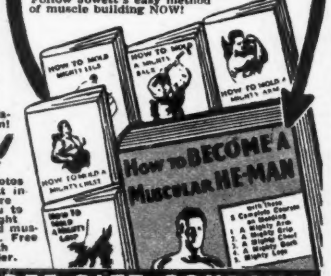


Photo Book of Famous Strong Men!

FREE! Photos that inspire you to might and muscle. Free with order.

George F. Jowett Champion of Champions

FREE GIFT COUPON!

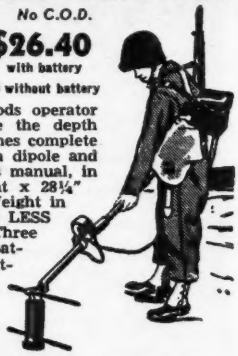
Jowett Institute of Physical Culture
230 Fifth Avenue, New York 1, N. Y. Dept. MI-911

Dear George:—Please send by return mail, prepaid, FREE Jowett's Photo Book of Strong Men, along with all 5 Muscle Building Courses. 1. Molding a Mighty Chest. 2. Molding a Mighty Arm. 3. Molding a Mighty Grip. 4. Molding a Mighty Back. 5. Molding Mighty Legs—Now all in One Volume "How to Become a Muscular He-Man." Enclosed find 10c for postage and handling. NO C.O.D.'s.

NAME _____ AGE_____
(Please Print Plainly, Include Zone Number)

ADDRESS _____

New ARMY MINE DETECTOR



An/PRS-1 is a portable device for detecting metallic and non metallic objects. Metals, Buried Cables and sewer Tile.

No C.O.D.

Our Special Price **$26.40** with battery

$17.50 without battery

By lengthening dipole rods operator will be able to increase the depth sensitivity. This unit comes complete with spare tubes, antenna dipole and reflector, and instructions manual, in wooden chest 9½" height x 28¼" length x 15½" depth. Weight in operation is only 22 lbs. LESS Batteries. Power supply: Three 45 volt and one 6 volt batteries. Uses standard batteries. Original COST $285.00. Shipping weight appr. 80 lbs. F.O.B. New York. No C.O.D.'s. Send Order to:

COLUMBO TRADING CO., INC.

304 CANAL ST. DEPT. MI NEW YORK 13, N. Y.

High School Course at Home

Many Finish in 2 Years

Go as rapidly as your time and abilities permit. Course equivalent to resident school work — prepares for college entrance exams. Standard H. S. texts supplied. Diploma. Credit for H. S. subjects already completed. Single subjects if desired. High school education is very important for advancement in business and industry and socially. Don't be handicapped all your life. Be a High School graduate. Start your training now. Free Bulletin on request. No obligation.

American School, Dept. H922, Drexel at 58th, Chicago 37

WATCHMAKING

Be a Watchmaker—Be Independent

Get practical training at the only school in Chicago accredited by the Horological Institute of America and U.H.A.A.
Day and Evening Classes—Approved for Veterans

Write today for free information

CHICAGO INSTITUTE OF WATCHMAKING
6 East Lake Street Dept. MI-11 Chicago, Illinois

Chicago TECH College

Write for catalog

ENGINEERING

BUILDING, DRAFTING, ETC.

Degree in 27 mos. Approved for G. I. Training. Prepare in Chicago, the Industrial Hub. Earn part living expenses. 45th year. Other shorter courses in Air Conditioning, Refrigeration, Radio, Electricity. Enter Jan., March, July, Sept.

P-93 TECH BLDG., 2000 SO. MICHIGAN AVE., CHICAGO 16

WAR SURPLUS BARGAINS

$500,000.00 INVENTORY for QUICK LIQUIDATION

Surplus items—hundreds of them for home, shop, factory, farm and outdoor use. New items, used items, reconditioned items—all at tremendous savings—all priced for quick sale.

Page After Page of Values

This big catalog shows page after page of amazing money saving values. Write for your copy today. Send 10c to cover postage, mailing, etc. Write today!

SEND TODAY FOR YOUR COPY **10c**

STARK'S Dept. MI-11 509 So. STATE STREET CHICAGO 5, ILLINOIS

NOW! Build and Keep Big Screen Top Quality Television Receiver at Home as You Prepare for a Profitable job in TELEVISION RADIO-ELECTRONICS

Choice of 10, 12½ or 16 inch picture tube

Now you can get this amazingly practical aid for learning Television at home, to help you get started toward FASCINATING WORK . . . GOOD MONEY . . . a THRILLING FUTURE—in a real job, or your own sales and service business. • When you complete our regular home training—described below—you can build and keep a top quality commercial-type Television Receiver. Standardized chassis is adaptable for a 10, 12½ or 16 inch direct view tube that gives big, bright, sharp, steady pictures. This is an optional training advantage—designed to provide the utmost in practical "learn-by-doing" home training in Television. Mail coupon for complete details. See why you owe it to your "Television Future" to enroll for DeForest's Training, Inc.

Mail Coupon NOW for FREE Information!

You also build and keep this Professional Type Equipment

See how D. T. I.'s amazingly effective methods help start you toward a GOOD JOB or your OWN BUSINESS in one of America's most promising fields—including Television, F.M. Radio, Aviation, Train, and Taxi Radio, Broadcast Radio, Industrial Electronics. Get modern lessons . . . plus 16 shipments of Radio-Electronic parts. Work over 300 experiments and projects—including building of (1) commercial-type OSCILLOSCOPE for practical T-V circuit training, (2) double-range R-F SIGNAL GENERATOR, (3) jewel-bearing MULTIMETER, (4) quality 6-tube SUPERHET RADIO. Then build and keep that big new Television Receiver. Here's EVERYTHING YOU NEED for real laboratory type training . . AT HOME!

Modern Chicago Laboratories

* If you prefer, you can get ALL your preparation in our new, Chicago training laboratories . . . one of the finest of its kind. Ample instructors . . . modern equipment. Write for details!

Employment Service

* When you complete your training, our effective Employment Service helps you get started toward a real future in Television—Radio—Electronics.

You also use HOME MOVIES! a D. T. I. Exclusive!

D. T. I. alone includes the modern, visual training aid . . . MOVIES . . . to help you learn faster, easier at home. See electrons on the march and other fascinating "hidden action"—a remarkable home training advantage that speeds your progress.

MAIL THIS COUPON NOW!

DeFOREST'S TRAINING, INC.
2533 North Ashland Avenue, Dept. MI-F11
Chicago 14, Illinois

Without obligation, give me complete facts showing how I may make my start in Television-Radio-Electronics.

Name.....Age.....
Street.....Apt.....
City.....Zone.....State.....

DeFOREST'S TRAINING, INC.

CHICAGO 14, ILLINOIS
A DE VRY Institution.

Invention Clinic

BY JOSEPH H. KRAUS

Perpetual Motion—2

There's an old saying that the bumblebee is aerodynamically incapable of flight. His undersized wings and oversized body make it impossible for him to leave the ground. But, knowing nothing about such things, he goes about his own business, flying just the same. And this same spirit seems to make some inventors of supposed perpetual motion devices think that physical laws may be flouted on the one hand and quoted as proof on the other hand. Such part truths cannot be used validly.

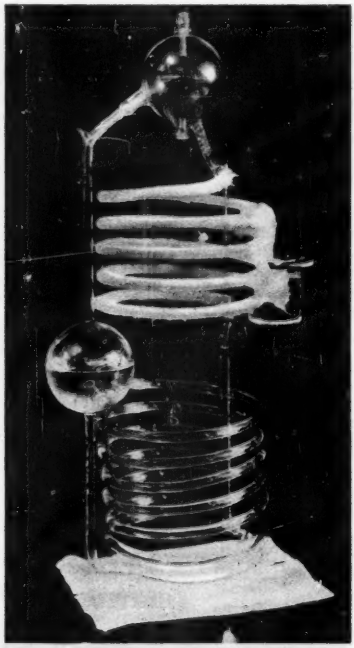
The amount of power which may be obtained from a "perpetual motion" device may be almost infinitely small even though the mechanism to produce it is ponderous. It is the establishment of the principle of operation which is of greatest importance.

Weight and Wheel Devices

As early as the 13th century, perhaps long before, physicists and philosophers realized the potentialities of levers, off-center wheels, balances and similar structures. Many thought that if the fulcrum of a lever could be constantly upset, or if the weight at one end could be made to slide toward and away from the fulcrum, they could produce a continuous oscillating motion. Hundreds of mechanisms were designed with these operations in mind but the best that anyone could get was a static state. Just as static were the mechanisms, either in wheel or belt form, which had a series of weights hinged to the periphery with those on one side farther from the center than those on the other. The theory was that the weights near the top would flop over while those on the ascending side would hang loosely, much closer to the hub of the wheel.

A wheel may be likened to a series of levers in which each weight is a spoke-like extension of a lever while the axle is the fulcrum. If the inventors of displaced-weight mechanisms made flat cardboard models of such devices, assigned values to the parts, allowed the models to turn on a thumbtack axle through an arc equal to a displacement of one of the arms, then calculated the moments on each side and added them when completed, they would find that there can be no motion because the assumed advantage on one side simply does not exist. And it makes no difference if the mechanism is a wheel or belt.

In mechanisms in which the wheel is constantly displaced on a shifting center, the weight of the wheel must be divided into sections and the moments of each section must be calculated. The effect is the same as if the sections were weights.



"Nearest thing to perpetual motion" is what some engineers call this vapor turbine, powered by slight temperature changes. Wet cloth on upper spirals makes them cooler than lower ones, causing turbine wheels to revolve very slowly.

"But I Saw One"

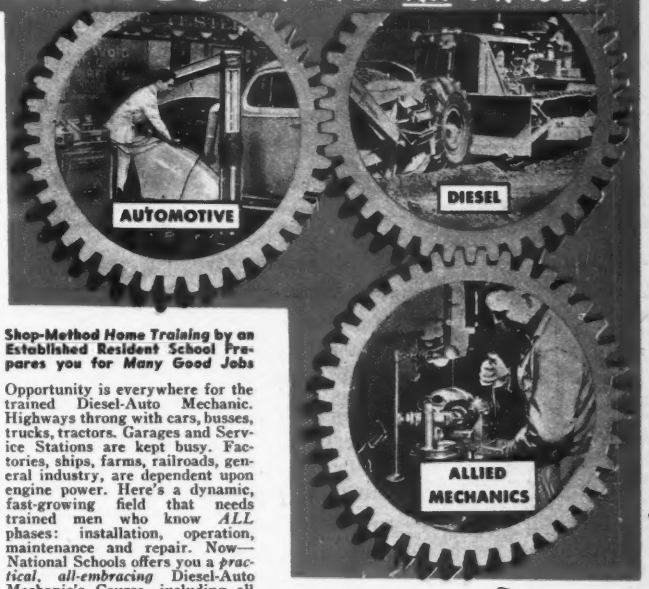
Even now you hear people say that they actually saw a machine of the flopping-weight type in operation. In fact, one of these was on display at an inventors' exhibition in New York 20 years ago.

"It must have been purchased and killed by power interests, so that this cheap form of energy won't interfere with their profits!" That's what people say.

What these well-meaning spectators don't know is that the machine was merely an attention-getter driven by a gentle current of air which ran through a hollow leg of the larger table, then up through the glass legs of the smaller table [*Continued on page* 20]

GET INTO DIESEL-AUTO MECHANICS *Master All Phases*

JOBS LIKE THESE ARE AVAILABLE TO *TRAINED* MECHANICS. CHOOSE THE FIELD YOU LIKE BEST



Get Complete Training

Diesel Fuel Injection
Automotive Motor Tune-up
Diesel Engine Rebuilding
General Garage Mechanic
Agricultural Implements
Auto Engine Rebuilding
Auto Elec. Service
Public Utilities
Parts Dealers
Bus & Truck Lines
Industrial Maintenance
Contracting & Excavating
Business of Your Own
AND many other similar openings.

As a National Schools graduate, you are trained for *ALL* opportunities in the Diesel & Auto Industries

EARN WHILE YOU LEARN

With our practical Master Shop-Method Home Training, you study at home in your spare time. You receive Spare Time Work Lessons, which show you how to earn while you learn . . . for extra money and experience. You learn by DOING.

TOOLS AND EQUIPMENT

To make your training complete, we give you selected mechanic's tools and equipment, illustrated below, including all-metal tool-box—as a regular part of your instruction.

Shop-Method *Home Training* by an Established Resident School Prepares you for *Many Good Jobs*

Opportunity is everywhere for the trained Diesel-Auto Mechanic. Highways throng with cars, busses, trucks, tractors. Garages and Service Stations are kept busy. Factories, ships, farms, railroads, general industry, are dependent upon engine power. Here's a dynamic, fast-growing field that needs trained men who know *ALL* phases: installation, operation, maintenance and repair. Now—National Schools offers you a *practical, all-embracing* Diesel-Auto Mechanic's Course, including all of these advantages:

Complete training, covering—Diesels, High Speed and Heavy Duty; Semi-Diesels, Gasoline and Special Fuel Engines AND Allied Mechanics.

Basic Lesson Texts
Diesel Installation
Operation-Maintenance
Diesel Chart Manual
Spare Time Lessons
Engine Service Manuals
Engine Repair
Drive Systems
Diesel Electric Power
Thermodynamics

TOOLS AND EQUIPMENT

INVESTIGATE
Secure Full Information
Both Resident and Home Study Courses Offered

NEW, ILLUSTRATED BOOK & SAMPLE LESSON SHOW HOW WE TRAIN YOU... SEND FOR THEM TODAY!

NO COST
NO OBLIGATION

APPROVED FOR VETERANS
Check coupon below

WE GIVE YOU TOOLS OF YOUR TRADE

NATIONAL SCHOOLS
LOS ANGELES 37, CALIF. • EST. 1905

FIND OUT NOW... MAIL COUPON TODAY

NATIONAL SCHOOLS, DEPT. 11-MID
4000 South Figueroa Street
Los Angeles 37, California

(Mail in envelope or paste on penny postcard)

Mail me FREE the book, YOUR FUTURE IN DIESEL-AUTO MECHANICS, together with the Sample Lesson. I understand I may keep and use the information with no obligation.

Name _____ Age _____

Address _____

City _____ Zone _____ State _____

Check here if Veteran of World War II ☐

INVENTORS

A patent is a valuable right. On the basis of a constitutional provision Congress has established a system under which inventors may secure the exclusive right to prevent the unauthorized use, manufacture and sale of their inventions for periods of seventeen years. The inventor secures this protection by obtaining a patent.

Unless an inventor is thoroughly familiar with such matters, he is advised to employ a competent registered patent attorney or registered patent agent, as the value of patents depends largely upon the skillful preparation of the specification and claims.

This firm is registered to practice before the U. S. Patent Office and is available to assist inventors in the preparation and prosecution of their cases. Detailed information and the preliminary steps to take to obtain patent protection will be furnished upon request.

Form below for mailing convenience

VICTOR J. EVANS & Co. *Merlin M. Evans*
REGISTERED PATENT ATTORNEY
450-M MERLIN BUILDING, WASHINGTON 6, D. C.

VICTOR J. EVANS & CO.
450-M Merlin Building, Washington 6, D. C.

Please send me without obligation a copy of your booklet "Patent Protection For Inventors" together with your convenient "Evidence of Invention" form.

Name.....

Address.....

City and State.....

PATENTS TRADEMARKS COPYRIGHTS

Invention Clinic

[*Continued from page* 18]

where it was directed against the weights hung from the periphery of the wheel. *And I should know about this because I designed the mechanism, had it built and then exhibited it.* So slight was the amount of air needed to keep the thing running that it was not noticed even when the machine was stopped by hand.

The inventor should not feel ashamed to make known the fact that he is working on a perpetual motion project. Neither should he hide his inventive thoughts behind a veil of secrecy. The chances are that he has developed nothing in this field which has not been proposed, patented or built before. It might save him a lot of time, money and heartaches to learn the truth early.

Don't assume that all inventors who have given thought to the possibilities of perpetual motion are nuts or cranks. Probably only one man in history ever achieved the fame and distinction of being both a master artist and an outstanding scientist—Leonardo da Vinci. Certainly no one since his death in 1519 has come close to duplicating his brilliance in both of these fields. Yet, da Vinci jotted down many designs for perpetual motion devices, most of which are being re-invented every year. And da Vinci knew mechanics.

So did many of the earlier scientists who became fascinated with the idea of an endless source of power. Some of our greatest modern scientists are giving thought to the subject again. They hold that it is no more impossible than the long-contended impossibility of transmutation of the elements, now a commonplace occurrence. So, designers of perpetual motion devices have illustrious company.

Secret Keys

One cannot help but feel that when an inventor of a perpetual motion contrivance is willing to disclose his mechanism except for a secret key or gimmick which he withholds for fear that the mechanism might get into the wrong hands, either the inventor is deluding himself or is a willful fraud.

About 20 years ago I was invited by the Chamber of Commerce of a small Eastern town to evaluate the mechanism of one of the town's mechanics. If there was anything to his perpetual motion machine, the members wanted to know about it. They were willing to invest money so that the mechanism could be perfected and would support the mechanic's family in the interim.

The device was based on a faulty under-

[*Continued on page* 26]

The GI's have it!

GOOD NEWS for Veterans! I. C. S. Courses—all 400 of them—are now available under the G.I. Bill of Rights.

Here's your chance to learn while you earn . . . to master a trade or profession and qualify for promotions and pay raises *on the job.*

The coupon brings full details of the course you check—and complete instructions on how to enroll. Mail it today!

INTERNATIONAL CORRESPONDENCE SCHOOLS

APPROVED under the G.I. BILL

BOX 2322-V, SCRANTON 9, PENNA.

Without cost or obligation, please send me full particulars about the course BEFORE which I have marked X:

Air Conditioning and Plumbing Courses
- ☐ Air Conditioning
- ☐ Heating ☐ Plumbing
- ☐ Refrigeration ☐ Steam Fitting

Chemical Courses
- ☐ Chemical Engineering
- ☐ Chemistry, Analytical
- ☐ Chemistry, Industrial
- ☐ Chemistry, Mfg. Iron & Steel
- ☐ Petroleum Refining ☐ Plastics
- ☐ Pulp and Paper Making

Civil Engineering, Architectural and Mining Courses
- ☐ Architecture
- ☐ Architectural Drafting
- ☐ Bridge and Building Foreman
- ☐ Building Estimating
- ☐ Civil Engineering
- ☐ Coal Mining
- ☐ Contracting and Building
- ☐ Highway Engineering
- ☐ Lumber Dealer
- ☐ Reading Structural Blueprints
- ☐ Sanitary Engineering
- ☐ Structural Drafting
- ☐ Structural Engineering
- ☐ Surveying and Mapping

Communications Courses
- ☐ Electronics
- ☐ Practical Telephony
- ☐ Radio, General ☐ Radio Operating
- ☐ Radio Servicing ☐ Television
- ☐ Telegraph Engineering

Electrical Courses
- ☐ Electrical Drafting
- ☐ Electrical Engineering
- ☐ Electric Light and Power
- ☐ Lighting Technician
- ☐ Practical Electrician

Internal Combustion Engines Courses
- ☐ Auto Technician ☐ Aviation
- ☐ Diesel-Electric
- ☐ Diesel Engines ☐ Gas Engines

Mechanical Courses
- ☐ Aeronautical Engineer's, Jr.
- ☐ Aircraft Drafting ☐ Flight Engineer
- ☐ Forging ☐ Foundry Work
- ☐ Heat Treatment of Metals
- ☐ Industrial Engineering
- ☐ Industrial Instrumentation
- ☐ Industrial Metallurgy
- ☐ Machine Shop ☐ Mech. Drafting
- ☐ Mechanical Engineering
- ☐ Mold-Loft Work
- ☐ Patternmaking—Wood, Metal
- ☐ Reading Shop Blueprints
- ☐ Sheet-Metal Drafting
- ☐ Sheet-Metal Worker
- ☐ Ship Drafting ☐ Ship Fitting
- ☐ Tool Designing ☐ Toolmaking
- ☐ Welding Engineering
- ☐ Welding—Gas and Electric

Railroad Courses
- ☐ Air Brake ☐ Car Inspector
- ☐ Diesel Locomotive
- ☐ Locomotive Engineer
- ☐ Locomotive Fireman
- ☐ Locomotive Machinist
- ☐ Railroad Section Foreman
- ☐ Steam-Diesel Loco. Eng.

Stationary Eng'r'g Courses
- ☐ Boilermaking
- ☐ Combustion Engineering
- ☐ Engine Running
- ☐ Marine Engineering
- ☐ Power Plant Eng'r'g ☐ Steam Engr.

Textile Courses
- ☐ Cotton Manufacturing
- ☐ Loom Fixing ☐ Rayon Weaving
- ☐ Textile Designing
- ☐ Woolen Manufacturing

Business and Academic Courses
- ☐ Accounting ☐ Advertising
- ☐ App. Psychology ☐ Bookkeeping
- ☐ Business Administration
- ☐ Bus. Correspondence ☐ Bus. Law
- ☐ Certified Public Accounting
- ☐ Commercial ☐ Commercial Art
- ☐ Cost Accounting
- ☐ Federal Tax ☐ First Year College
- ☐ Foremanship ☐ French
- ☐ Good English ☐ High School
- ☐ Higher Mathematics ☐ Illustration
- ☐ Industrial Supervision
- ☐ Motor Traffic ☐ Postal Civil Service
- ☐ Retailing ☐ Retail Bus. Management
- ☐ Salesmanship ☐ Secretarial
- ☐ Sign Lettering
- ☐ Spanish ☐ Stenography
- ☐ Traffic Management

Name_____ Age_____ Home Address_____

City_____ State_____ Working Hours_____ A.M. to_____ P.M.

Present Position_____ Employed by_____

Length of Service in World War II _____

Enrollment under G.I. Bill approved for World War II Veterans. Special tuition rates to members of the Armed Forces.
Canadian residents send coupon to International Correspondence Schools Canadian, Ltd., Montreal, Canada.

MAKE BIG MONEY AT HOME IN SPARE TIME

CASH IN ON HUGE XMAS DEMAND FOR METALIZED BABY SHOES

$5 PER HOUR —for just your SPARE TIME hours. Think how this can multiply when the whole family helps.

START MAKING $$$ AT ONCE —No long period of tedious training. I send you everything you need to start earning the VERY FIRST DAY.

PAY DAY EVERY DAY —With YOUR OWN fascinating BIG PROFIT Metalizing Business. Hire others to work for YOU. Watch PROFITS grow. Millions of NEW PROSPECTS yearly.

A TY-A-CINTE BRINGS MANY $$$ Just think—a BIG PAY Business of YOUR OWN. Double your Income. Be ready for HUGE XMAS demand. For FREE details on the Opportunity of Your Lifetime MAIL COUPON TODAY!

FREE! MONEY MAKING PLAN Works Like Magic! Try It At Our Risk MAIL COUPON TODAY!

John Kiktavi, KIKTAVI CO.
Dept. MI-11, 2111 W. Manchester, Los Angeles 47
O.K.—as long as it's FREE tell me about it.
NAME.....
STREET.....
CITY..... ZONE..... STATE.....

AUTO BOOKS ON APPROVAL

CAN YOU FIX IT?

These wonder books tell step by step HOW to make difficult repairs and adjustments, how to keep a car at maximum efficiency, including latest improvements in car design and operation. Engine troubles and how to correct them well covered.

4 BIG, THICK VOLUMES

Over 2700 Pages, 2000 illustrations, wiring diagrams, etc. Beautiful modernistic, washable cloth binding.

SEND NO MONEY. Just mail the coupon for a complete set of 4 Big, Thick Auto Books. 20th Edition. Over 2700 Pages! Whether you are a mechanic or helper, expert or apprentice, auto owner or driver, take immediate advantage of this FREE EXAMINATION OFFER.

MAKE GOOD MONEY NOW HOLD A PERMANENT JOB

America wants its automobiles kept in good repair. Men with "know how" are in demand, at big pay. These books will help you get and hold an important job, or give you a chance to go into business for yourself now or later. Any man who half tries to improve himself can learn auto servicing and repairing by this quick reference method. Use the JIFFY INDEX to find easily understood answer to any auto problem. These wonder books prepared by eleven of America's great automobile engineers. Many hundreds of valuable illustrations. Send the coupon TODAY.

A year's consulting privileges with our engineers now given with these books without extra charge.

Publishers Since 1898

AMERICAN TECHNICAL SOCIETY, Dept. A8320
Drexel Ave. at 58th St., Chicago 37, Ill.

I would like to examine your 4-Volume Set of Auto Books. I will pay the delivery charges only, but if I choose I may return them express collect. If after 10 days' use I prefer to keep them, I will send you $2 and pay the balance at the rate of only $3 a month until $24.80 has been paid. Include consulting service as offered above.

Name .....
Address .....
City ..... State .....

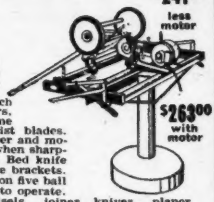
Please attach letter stating age, occupation, employer's name and address, and name and address of at least one business man as reference. Men in service, also please give home address.

MODERN LAWN MOWER SHARPENER

FOR LAWN MOWER SHOPS FIX-IT SHOPS

GOLF COURSES • PARKS
101 OTHER JOBS

PRICE $241.50 less motor



$263.00 with motor

Sharpens All Reel Type Mowers • Hand, Power or Gang • 10 to 20 Minutes • No Dismantling • No Extra Attachments Needed.
All reel type mowers, from 5-inch edgers to 36-inch power mowers, are quickly sharpened to extreme ends of both left and right twist blades. Handle, wheels, roller and motor remain in place when sharpening is in process. Red knife is sharpened in same brackets. Grinding head rides on five ball bearing races. Easy to operate. Also sharpens chisels, joiner knives, planer blades. Big profit maker. Own your own business. Send Today for **FREE** Illustrated Bulletin No. 12C

ORDER NOW Immediate Delivery

MODERN MFG. CO. 100 N. FAIR OAKS AVE. PASADENA 1, CALIFORNIA

RAISE HAMSTERS

The new wonder animals from Syria. Often called Toy Bears. Delightful pets . . . Everyone wants them . . . Laboratories need thousands. Clean, odorless. Raise anywhere. Profitable and interesting. Write today for big, free, picture book.

GULF HAMSTERY, 1553 BASIL ST., MOBILE, ALA.

NATION'S LARGEST EXCLUSIVE ELECTRICAL SCHOOL

"LEARN-BY-DOING"

ELECTRICITY

PRACTICAL TRAINING NOT "HOME STUDY"

G.I. APPROVED Get actual experience in great shops of M.T.I. Learn all phases Practical Electricity; Housewiring, Motors, Const., Maintenance, etc. Living arrangements, Part-time jobs, etc. A post card brings the story.

MICHIGAN TECHNICAL INSTITUTE, Dept. MI-11
2281 W. Fort St., Detroit 16, Michigan

WATCH REPAIRING

Be a Master Watchmaker!

Graduates earn big money—many in business for themselves. The famous Sweazey System of Instruction teaches you quickly and easily. Our 42nd year. Write today for free book about watchmaking, gem setting and engraving. Chicago School of Watchmaking, Dept. 6119, 1608 Milwaukee Avenue, Chicago 47, Illinois.

Learn PHOTOGRAPHY

Earn more money through a career in photography than you have ever made before! N. Y. I.'s simple-to-understand Home Study Course is your spare time SHORT CUT TO SUCCESS. Resident Training at our famous New York School is available with subsistence under the G. I. Bill. Write today!

NEW YORK INSTITUTE OF PHOTOGRAPHY

Dept. "153," 10 West 33 Street, New York 1, N. Y.

STOPS FOGGY WINDSHIELDS

NEW Chemical-Mitt

Amazing Discovery! Autoists wild over new "NO-FOG" Windshield Cleaner. Simply glide over windshield chemically-treated Mitt—at once glass sparkles crystal clear. Blurry mist, frost, sleet, snow disappear like magic. Stops fogging. *Sells like wild!*

SAMPLES FOR AGENTS Sample offer sent immediately to all who send name at once. A penny postal will do. SEND NO MONEY—*just your name.*

KRISTEE CO., 775 Bar Street, AKRON, OHIO

YOU Need My PRACTICAL Training to Make Money in TELEVISION-RADIO and ELECTRONICS!

Learn at HOME IN YOUR SPARE TIME

Now is the Time to Get Into This Fast Growing Industry—Prepare for a Fine Paying Job or Your Own Business!

I have trained hundreds of men to become technicians—and I'm ready to do the same for you. Whether your goal is a fine paying job in one of Radio's many branches—or a successful Radio and Television business of your own—*you need the kind of training I offer!* My training is practical and down to earth. YOU NEED NO PREVIOUS EXPERIENCE. I start you with basic fundamentals and give you plenty of practical shop-bench training with many kits of parts I send you. This is the training that sticks with you and makes money for you on the job!

I'll Send You **8 BIG KITS of** Radio Parts and Equipment

GET PAID FOR SPARE TIME WHILE LEARNING

Soon after you start training I send you my famous BUSINESS BUILDERS that show you how to make money in spare time doing interesting Radio jobs. I send you 8 big kits of Radio parts and equipment and help you build step-by-step a powerful 6-tube superhet radio, a 16-range test meter, plus other mighty useful equipment for Radio and Television servicing. You will perform over 175 fascinating experiments while training. You will learn about Television—so that you will be qualified to step into this fast growing, profitable field. I also send you many valuable service manuals, diagrams, and my book telling exactly how to set up your own Television and Radio shop. Clip and mail the coupon below for my two big FREE Radio books. I employ no salesmen—and nobody will call on you

HAVE A BUSINESS OF YOUR OWN

A profitable Radio and Television Service Shop may be started with little capital. I will show you how to get started. At left is pictured one of my graduates, Mr. Merrit C. Sperry, Fairmont, Minn. in his own shop.

All Kits Are YOURS TO KEEP

Each of the hundreds of Radio parts and other items I send my students is theirs "for keeps." You may use this equipment in your Radio and Television service work and save many dollars by not having to buy expensive "ready-made" test equipment.

CALVIN SKINNER of New Orleans, La. tells us he makes $5 to $10 in spare time repairing radios. He is now also working with a Television set.

LOREN D. SAUCIER of Coloma, Mich. reports that my training has made it possible for him to repair large numbers of Radio and Television sets.

Radio and Television Industry Booming

You couldn't pick a better time to get into Radio-Television and Electronics. New Television stations are going on the air to serve every major city—hundreds of new AM and FM Radio broadcasting stations are also on the air. All this creates new and bigger opportunities for the trained man who knows Radio-Television and Electronics

VETERANS

THIS TRAINING AVAILABLE TO YOU UNDER THE G.I. BILL

My Training Includes . . . Television, FM (Frequency Modulation), Public Address and High Frequency Applications

These Two Big Radio Books FREE!

Just mail coupon for a FREE sample Sprayberry Lesson and my big FREE book, "How To Make Money In Radio-Television and Electronics." Learn why my really *practical* training is best of all for you. Discover what's ahead for you in Radio-Television and Electronics. No obligation. Don't delay! Mail the coupon now—and count on me for fast action.

SPRAYBERRY ACADEMY OF RADIO

RUSH COUPON *Today!*

SPRAYBERRY ACADEMY of RADIO, Dept. 15-C,
111 North Canal Street,
Chicago 6, Illinois

Please rush my FREE copies of "How To Make Money In Radio-Television and Electronics" and "How To Read Radio Diagrams and Symbols."

Name.....Age.....

Address.....

City.....State.....

( ) Check here if you are a Veteran

The Editor's Workbench

Here's MI Boating Editor John G. (Jock) Kingdon at Sea Bright, N. J., just before casting off for a test run in a 20-foot Zobel "Sea Fox" seaskiff. He liked it fine, too.

This, That and The Other

Ever been in love? I mean, so l'amour-happy you went around picking petals off poor, innocent little black-eyed Susans the whilst you were muttering "She loves me, she loves me not, etcetera, etcetera not?" Remember what a smallish kind of a flower it was? Well, Casanova, you ought to see the king-sized, 1949 black-eyed Susan they're growing up at the Genetic Experiment Station in Northampton, Mass. It's seven inches across—about three times bigger than the old one. And you know why these new posies are so colossal? Because they've been treated with a wondrous drug called colchicine, whose chromosome-doubling characteristics we told you about in the March issue (Apples As Big As Your Head! by Donald G. Cooley). Just thought I'd mention the article again because a few skeptics informed us, at the time it was published, that Mr. Cooley and yours truly and the whole staff of MI unto the third and fourth generations were, to coin a phrase, slug-nutty. Apples as big as your head, ha ha! Well, if the geneticists can triple the size of a little old black-eyed Susan, you better watch out the next time you sit under an apple tree. You might get crowned with a 50-pound Mackintosh. Don't say I didn't warn you.... Speaking of love, that fellow Romeo's devotion for the what's-her-name girl was just a passing fancy compared with the worshipful adoration a sport car owner lavishes on his toney, high-compression, hard-sprung horseless carriage. Just say a disrespectful word about The Car and you'll get yourself a shot in the head. Unless you are a certain Miss Sally Daigh, age two, whose old man is the editorial boss of all our Fawcett magazines and the worshipful owner of a beautiful red M. G. roadster. Sally's crazy about the car, too. But her tender devotion to it finds expression in words that might not win the complete approval of serious-minded sport car proprietors. Know what she calls it? This'll killya. She calls that magnificent hunk of automotive engineering "Daddy's Kiddie Kar." Ah, youth, youth! . . . Which reminds me that the editors of (y)our favorite magazine are all looking a mite older than they did at the start of the summer. Happier, though. The reason being that in addition to putting out the regular issues of MI they have all been beaver-busy preparing the new editions of no less than nine of our well-known and (we hope) still well-liked one-shots. Already completed and on sale at 60 cents a copy are AVIATION YEARBOOK, GOOD PHOTOGRAPHY No. 11, HANDYMAN'S MANUAL No. 9, 40 HOMES AND PLANS FOR BUILDING No. 3 and HOW TO BUILD IT No. 11. Still in the works and due for release early next year are PHOTOGRAPHY HANDBOOK No. 13, MODEL BUILDERS' HANDBOOK No. 4, HOW TO BUILD 20 BOATS No. 10 and BOATING HANDBOOK No. 2. Happy reading! . . . And Happy Birthday to ourselves, on account of with this issue MECHANIX ILLUSTRATED is just 21 years old. . . . According to the Texaco people, within the next four years 90 per cent of all new cars will come equipped with automatic transmission. Presumably, whether the customers want it or not. Mean to say we *gotta* let the gremlins shift gears for us? M-m-m-mm. I wonder. We've been running a little survey ourselves on the question. More about this next month. . . . At which time also we'll proudly present the first installment of a two part how-to-build-it article by model expert Bill Winter, describing complete plans for a six-foot, radio-controlled plane. See ya then!—*Bill Parker*

WHAT Every AUTO MECHANIC Wants to Know

A motor vehicle is a machine of many parts, each part designed and constructed for its own special function.
All good mechanics, like good doctors, should know the working theory and operation of each part and understand what causes trouble and how to remedy it.

LET AUDELS AUTO GUIDE SOLVE YOUR PROBLEMS

Every auto mechanic, helper, serviceman and operator can use a copy of AUDELS AUTOMOBILE GUIDE. The information it gives saves time, money and worry. Highly indorsed by all users. It presents the whole subject of auto mechanics from A to Z in plain language and simple terms.
This Big Practical Book gives full information with working diagrams covering the principles, construction, ignition, service and repair of modern cars, trucks and buses.
A complete Guide of 1800 pages, with over 1500 illustrations showing inside views of the working parts, with instructions for service jobs. **Diesel engines, Fluid and Hydra-matic drives fully explained.**

IT PAYS TO KNOW HOW TO

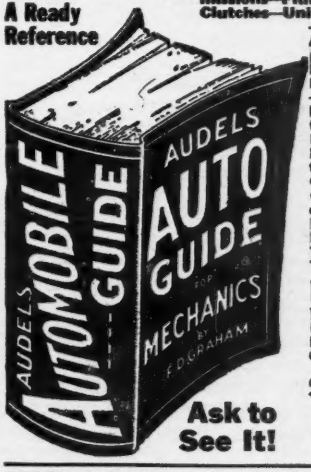
How to fit pistons—How to locate engine knocks—How to fit connecting rod bearings—How to service main bearings—How to recondition valves—How to time valves—How to adjust fan belts—How to adjust carburetors & chokes—How to rebuild a clutch—How to service automatic transmissions—How to service brakes—How to adjust steering gear—How to cope with ignition troubles—How to service distributors—How to time ignition—How to "tune up" an engine.

INFORMATION IN A HANDY FORM

73 INTERESTING CHAPTERS—*Read this partial list of subjects on which practical information is fully given for quick reference under the headings as shown below. Ready Reference Index.*

All Parts of an Automobile—Automotive Physics—The Gas Engine—Gas Engine Principles—Multi-Cylinder Engines—Horse Power—Automobile Engines—Stationary Parts—Moving Parts—Pistons—Piston Rings—Connecting Rods—Crank Shafts—Valves—Valve Gear—Cams and Cam Action—Valve Timing—Cooling Systems—Fuel Feed Systems—Dual Fuel Feed—Mixture—Carburetors—Carbureter Service—Automatic Choke—Super-Chargers—Transmissions—Special Transmissions—Fluid and Hydra-matic Drives—Clutches—Universals and Propeller Shafts—The Differential—Rear Axles—Rear and Front Suspension—Running Gear—Brakes—Wheel Alignment—Knee Action—Steering Gear—Tires—Lubricants and Lubrication—Automotive Electricity—Ignition Systems—Magneto Ignition—Spark Plugs—Ignition Cells—Distributors—Automatic Spark Control—Ignition Timing—Generators—Starters—Generator and Starter Testing—Lighting Systems—Storage Batteries—Charging and Testing—Diesel Engines and Trouble Shooting.

A Ready Reference



Ask to See It!

7 DAYS' FREE TRIAL

TO GET THIS ASSISTANCE FOR YOURSELF SIMPLY FILL IN AND MAIL COUPON TODAY.

$4 COMPLETE PAY $1 A MO. ONLY

AUDEL, Publishers, 49 W. 23 St., New York 10, N.Y.

Sent on 7 Days Approval

Step up your own skill with the facts and figures of your trade. Audels Mechanics Guides contain Practical Inside Trade Information in a handy form. Fully illustrated and Easy to Understand.
Highly Endorsed. Check the book you want for 7 DAYS FREE EXAMINATION.
Send No Money. Nothing to pay postman.

CUT HERE

MAIL ORDER

AUDEL, Publishers, 49 W. 23 St., NEW YORK 10, N. Y.

Please send me postpaid for FREE EXAMINATION books marked (x) below. If I decide to keep them I agree to mail $1 in 7 Days on each book or set ordered and further mail $1 monthly on each book or set until I have paid price, otherwise I will return them.

- ☐ **AUTO GUIDE,** 1800 Pages . . . $4
- ☐ DIESEL ENGINE MANUAL, 400 Pages 2
- ☐ WELDERS GUIDE, 400 Pages 1
- ☐ MACHINISTS Handy Book, 1600 Pages . . . 4
- ☐ POWER PLANT ENGINEERS Guide, 1500 Pages. 4
- ☐ ENGINEERS & FIREMANS EXAMS, 528 Pages. 1
- ☐ PUMPS, Hydraulics & Air Compressors, 1658 Pgs. 4
- ☐ MARINE ENGINEERS Handy Book, 1280 Pages 4
- ☐ ENGINEERS & Mechanics Guides (8 Book Set). 12
- ☐ Answers on Practical ENGINEERING, 254 Pages 1
- ☐ ELECTRIC WIRING DIAGRAMS, 210 Pages . . 1
- ☐ ELECTRICIANS EXAMINATIONS, 250 Pages. 1
- ☐ ELECTRICAL DICTIONARY, 9000 Terms . . . 2
- ☐ ELECTRIC MOTOR GUIDE, 1000 Pages 4
- ☐ HANDY BOOK OF ELECTRICITY, 1440 Pages 4
- ☐ ELECTRICAL POWER CALCULATIONS, 425 Pgs. 2
- ☐ RADIOMANS GUIDE, 914 Pages 4
- ☐ ELECTRONIC DEVICES, 216 Pages 2
- ☐ ELECTRIC LIBRARY, 7000 Pages (12 Book Set). 18
  Vols. I, II, III, IV, V, VI, VII, VIII, IX, X, XI, XII $1.50 Ea.
- ☐ OIL BURNER GUIDE, 384 Pages 1
- ☐ HOUSE HEATING GUIDE, 1000 Pages 4
- ☐ CARPENTERS & Builders Guides (4 Book Set). 6
- ☐ PLUMBERS & Steamfitters Guides (4 Book Set). 6
- ☐ MASONS & Builders Guides (4 Book Set) . . . 6
- ☐ BLUE PRINT READING, 416 Pages 2
- ☐ PAINTERS & DECORATORS MANUAL, 450 Pgs. 2
- ☐ GARDENERS & GROWERS Guides (4 Book Set). 6
- ☐ REFRIGERATION & Air Conditioning, 1280 Pgs. 4
- ☐ SHEET METAL WORKERS Handy Book, 388 Pgs. 1
- ☐ SHEET METAL PATTERN LAYOUTS, 1100 Pgs. 4
- ☐ AIRCRAFT WORKER, 240 Pages 1
- ☐ MECHANICAL DRAWING GUIDE, 160 Pages. 1
- ☐ MECHANICAL DRAWING & DESIGN, 480 Pgs. 2
- ☐ MATHEMATICS & CALCULATIONS, 700 Pgs.. 2
- ☐ MECHANICAL Dictionary, 968 Pages 4
- ☐ MILLWRIGHTS & Mechanics Guide, 1200 Pgs. 4

Name _____

Address _____

Occupation _____

Employed by _____ MM

INVENTORS

When you are satisfied that you have invented a matter of value—write me, without obligation, for full information as to what steps you should take to secure a Patent.

The usual first step is to have a search of the prior U. S. Patents conducted, so that I can report to you on the question of Patentability.

PATRICK D. BEAVERS
(Formerly RANDOLPH & BEAVERS)
Registered Patent Attorney
923 Columbian Building Washington 1, D. C.

PATRICK D. BEAVERS, *Registered Patent Atty.*
923 Columbian Bldg., Washington 1, D. C.

Please send me full information on how to secure Patent Protection and Trademark Registration.

Name .....

Street .....

City..... State.....

INVENTORS

Hundreds of manufacturers have requested our assistance in locating marketable new products. Complete information, free.

INSTITUTE of AMERICAN INVENTORS
Dept. 5, 1926 Eye St. N.W., Washington 6, D.C.

ENGINEERING DEGREE IN 27 MONTHS

INDIANA TECHNICAL COLLEGE

Aeronautical, Chemical, Civil, Electrical, Mechanical, and Radio Engineering (inc. television). Drafting. 1-yr. Gov't approved for G.I.'s. Low rate. Earn board. Large industrial center. Students from 48 states, 18 countries. Demand for graduates. Enter December, March, June, September. Catalog.
1011 E. Washington Blvd., Ft. Wayne 2, Ind.

PATENTS

PATENT LAWYER

TRADE MARKS
GUSTAVE MILLER
119MI WARNER BLDG.
WASHINGTON 4, D. C.

ASSOCIATE EXAMINER
U. S. PATENT OFFICE 1922-1929
PATENT ATTORNEY AND ADVISOR
U. S. NAVY DEPT. 1930-1947
REGISTERED PATENT ATTORNEY
Send for Form
"INVENTOR'S RECORD"

PATENTS
AND TRADE MARKS
C. A. SNOW & CO.
REGISTERED PATENT ATTORNEYS
WRITE FOR INFORMATION TO
427 SNOW BUILDING, WASHINGTON 1, D. C.

Invention Clinic

[*Continued from page* 20]

standing of the action of forces. Later discussions established that the inventor knew his changes would not modify the result. His "secret key" was just a bid for the town's financial support. This case recently came up again with the same inventor, the same story but different financial interests.

One possibility is that the inventor has for 20 years been trying to locate the secret gimmick, or has withheld it from use. But records have established that the same design has been tried repeatedly during the past 440 years and nothing new was added in the present design.

Another inventor was selling stock for the purchase of mercury which he said was needed to get his rocking mechanism into operation. He admitted that the tanks could have been filled with water but this "would give less power and had been tried without success." Mercury was more expensive than water and offered a better excuse for selling stock.

All perpetual motion inventors are not such frauds. Many have not pursued their search to the point where they realize the impossibility of success. Some do not have the fundamental background and thus hope to be able to discover a little "trip" or "spring" which will mean success.

Weight and Buoyancy

One of the simplest of the weight-distribution, perpetual motion designs consists of a triangle-like track resting on its hypotenuse. Picture a triangle with sides of 3 and 4 and a base of 5 units of length respectively. Heavy balls connected in chain fashion run on the sides and hang below the triangle. The number of weights on one slope will exceed the number on the other slope. Because those below the triangle are evenly distributed, there is equilibrium here. Hence, reason the inventors of this old design, the greater number of balls on one leg of the triangle should pull the others up and keep the mechanism in motion. The simplest of calculations will show that this is not so, however.

Almost the exact opposite of the systems designed to utilize gravitational forces are those which attempt to use chambers to float to the surface of a liquid on one side of a wheel or belt and sink on the opposite side. Nearly all designs based on this principle are modifications of a simpler and more easily understood arrangement. They do not add to the performance, they merely confuse those to whom the invention is explained.

[*Continued on page* 28]

They Never Knew It Was SO EASY To Play

Thousands Now Play Popular Songs Who Didn't Know a Note of Music Before

You, too, can learn your favorite instrument at home, without a teacher, this quick, easy, money-saving way

THINK of the fun YOU are missing! The popularity, friendship, good times! Why? Because you think it's *hard* to learn music. You have an idea that it's a slow, tedious task, with lots of boring drills and exercises.

That's not the twentieth-century way! Surely you've heard the news! How people all over the world have learned to play by a method so simple a child can understand it—so fascinating that it's like playing a game. Imagine! You learn without a teacher—in your spare time at home—at a cost of only a few cents a day! You learn by the famous print-and-picture method—every position, every move before your eyes in big, clear illustrations. You CAN'T go wrong! And best of all, you start playing real tunes almost at once, from the very first lesson.

No needless, old-fashioned "scales" and exercises. No confused, perplexing study. You learn to play by playing. It's thrilling, exciting, inspiring! No wonder hundreds of thousands of people have taken up music this easy way. No wonder enthusiastic letters like those reproduced here pour in from all over the world.

Sound interesting? Well, just name the instrument you'd like to play and we'll prove you CAN! (Instruments supplied when needed, Cash or Credit.) Mail the coupon or write. Do it now! 51st year.

U. S. SCHOOL OF MUSIC
9711 Brunswick Bldg.
New York 10, N. Y.

Learned Quickly at Home. "I didn't dream I could actually learn to play without a teacher. Now when I play for people they hardly believe that I learned to play so well in so short a time." *H. C. S., Calif.

Music is the magic key to friendship, fun, romance. The person who can play a musical instrument is always sure of a welcome. Why not let music open up a new world for you. Thousands have discovered unexpected pleasure and profit in music, thanks to the unique method that makes it amazingly easy to learn.

Send for FREE Booklet and Print and Picture Sample

See for yourself how this wonderful self-instruction method works. Sit down, in the privacy of your own home, with the interesting illustrated booklet, "How to Learn Music at Home." No salesman will call—decide for yourself whether you want to play this easy way.

Invited to Parties. "Before I took your course I didn't know one note of music. Then three months later I started to play for dances. I've been invited to many parties. The course is easy and interesting." *R. M., Vancouver, B. C.

Well Worth Money. "The course is fully self explanatory. When one is finished with it there is little one need learn. It is well worth the money and I fully believe you have the finest course on the market today." *R. E. G., Clarksburg, W. Va.

Surprised Friends. "People who hear me play don't understand how I do it. They ask if I haven't had lessons from a teacher. To their surprise they find I haven't. I'm glad to be a student of your School." *M. H., Athol, Kans.

*Actual pupils' names on request. Pictures by Professional models.

U. S. SCHOOL OF MUSIC
9711 Brunswick Bldg., New York 10, N. Y.

I am interested in music study, particularly in the instrument indicated below. Please send me your free booklet, "How to Learn Music at Home" and the free Print and Picture Sample.

Piano	Reed Organ	Modern Elementary Harmony
Guitar	Tenor Banjo	Mandolin
Hawaiian Guitar	Ukulele	Practical Finger Control
Violin	Clarinet	
Piano Accordion	Trombone	
Saxophone	Flute	
Trumpet, Cornet	Piccolo	

Mr. / Miss / Mrs. ..... Have You This Instru.? .....
(PLEASE PRINT)

Address .....

City ..... State .....

Note: If you are under 16 yrs. of age, parent must sign coupon.

SAVE 2c—Stick coupon on penny postcard.

INVENTORS

IF YOU WISH TO PROTECT YOUR INVENTION

YOU SHOULD TAKE STEPS TO PROTECT IT BY A U.S. PATENT

WRITE ME FOR "RECORD OF INVENTION" FORM

CARL MILLER
REGISTERED PATENT ATTORNEY

WOOLWORTH BUILDING, 35th FLOOR, 119B
NEW YORK CITY

Please send me "Record of Invention" Form

NAME .....

ADDRESS .....

INVENTORS

Whether an invention is patentable can be substantially determined by a search of the U. S. Patent records. Without obligation, write for information explaining the steps you should take to secure a patent.

JOHN N. RANDOLPH
Registered Patent Attorney
209 Columbian Building Washington 1, D. C.

TRADE MARKS • COPYRIGHTS •
PATENTS
The Time to Contact a Patent Attorney is Promptly After You Have Finished Your Invention
Write for FREE "INVENTOR'S GUIDE" & "Record of Invention"
FRANK LEDERMANN *Registered Patent Attorney*
154 Nassau St. • Room 2024 • New York 7, N. Y.

Invention Clinic

[*Continued from page* 26]

Imagine a wheel with six hollow spokes running diametrically across from one edge of the rim to the other. At the end of each spoke place a bellows similar to those used to furnish air for a fireplace. Immerse the entire structure in a tank of water.

The theory of operation is that the movable side of a bellows will drop free near the bottom and as it does so it will suck air from its companion bellows near the top of the wheel. The inflated bellows will then rise and cause rotation.

It makes no difference if they are plain bellows or cylinders, if the design calls for a wheel or a belt, if weights or pressure plates are used—all are merely gingerbread. They contribute nothing to the operation. The basic concept is at fault and because this is so, none of the embellishments will do any good.

Hydraulic Columns

Much inventive time has been given to unequal columns of water or other fluids in which buoyant articles are supposed to come through a trap at the bottom, rise to the surface, then drop again to the starting point. In these structures, the inventor hopes that the chain of floats will carry the single float through the watertight opening at the bottom.

But the mechanism operates backwards until most of the liquid has been lost from the column which is supposed to give the buoyant effect. Then, when a state of equilibrium between friction and buoyancy has been reached, the mechanism stops.

And Next Month . . .

Next month we will conclude the discussion on perpetual motion devices with analysis of capillary, magnetic, compressed air and special electrical units. •

HIGHEST ROYALTIES and CASH

FOR YOUR INVENTIONS

Write for FREE booklet without obligation

UNIVERSAL MARKETING CO.

354 S. SPRING ST. (Suite L) LOS ANGELES 13, CALIF.

WHICH OF THESE *Opportunities* INTERESTS *You* MOST?

● Today, choose the job you want—and prepare for it. Or if you are already engaged in the work you like best, start training *now* for quicker promotion. Acquire the knowledge that will help you to get ahead faster, make more money and have greater security.

American School, founded in 1897 as an educational institution *not for profit,* can help you to reach your goal just as it has helped others during the past fifty-two years. Check the coupon at right, add your name and address and mail it at once. The school will send you details on its training plan and outline of study prepared by specialists. There is no charge, no obligation, so send the coupon immediately.

AMERICAN SCHOOL

Dept. G828, Drexel at 58th Street, Chicago 37

CHECK, CLIP AND MAIL COUPON NOW

AMERICAN SCHOOL, Dept. G828, Drexel at 58th, Chicago 37, Ill.

Without obligation, Please send FREE and postpaid, bulletin and details of the Subjects checked:

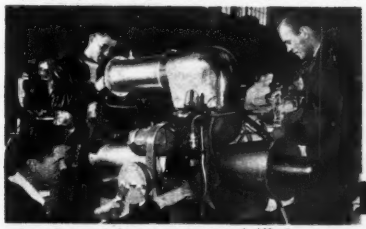
- ☐ PLASTICS ENG'R
- ☐ Refrigeration
- ☐ Architecture and Building
- ☐ Contracting
- ☐ Practical Plumbing
- ☐ Automotive Engr.
- ☐ Aviation Drafting
- ☐ Aviation
- ☐ Business Management
- ☐ Accounting
- ☐ Electrical Engr.
- ☐ Electricity-Pract.
- ☐ Electronics, Industrial
- ☐ Bookkeeping
- ☐ Private Secretary
- ☐ Diesel Engineering
- ☐ Sheet Metal Pattern Drafting
- ☐ Railway Training
- ☐ Drafting and Design for Men and Women
- ☐ Radio
- ☐ High School
- ☐ Air Conditioning
- ☐ Mechanical Eng.
- ☐ Shop Management
- ☐ Tool Making
- ☐ Better Foremanship
- ☐ Machine Shop Operation

Name..... *Occupation*.....

Address..... *Age*.....

City..... *State*.....

Northrop student engineers consult on new type control system for student-designed private plane. Complete metal mock-up was fabricated and assembled by students as part of training.



As another practical training project typical of Northrop instruction methods, engineering students developed this light-weight turbo-jet aircraft engine by adapting a turbo-supercharger.

APPROVED FOR VETERANS

FASCINATING WORK RICH REWARDS IN AERONAUTICAL ENGINEERING

The swift, spectacular progress of *Aviation* is unfolding right before your eyes . . . sensational new speed records . . . ever-expanding, world-wide commercial airlines . . . spectacular new military aircraft. Back of the countless new aircraft and new achievements *yet to* come there must be trained *Aeronautical Engineers.* Here is a ringing challenge to the man of imagination and ambition. Here is a career field where your talents — whether *creative* or *practical* — can have full play. In *Aeronautical Engineering* you can enjoy the ideal combination of unlimited opportunity, fascinating work, and good pay from the start.

Northrop training equips you to make the most of this magnificent opportunity. Here at Northrop — birthplace of some of Aviation's greatest achievements — you have the priceless advantage of training in an actual industry environment. The outstanding record of *Northrop* graduates — in winning choice jobs and fast advancement — *proves* the opportunity for YOU. Learn all about it. Get full details on *Northrop's* 2-year Engineering Course. You can start your training soon — classes start every 8 weeks.

SEND COUPON FOR CATALOG NOW

NORTHROP AERONAUTICAL INSTITUTE
1523 East Broadway, Hawthorne, Los Angeles County, Calif.

Please send information on opportunities in Aeronautical Engineering, your catalog, and starting dates of classes. I am interested in:

☐ Aeronautical Engineering ☐ Aircraft & Engine Mechanics

Name ..... Age .....

Address .....

City ..... Zone ..... State .....

Check one: ☐ Veteran ☐ Non-Veteran

Northrop *Aeronautical Institute*

Division of Northrop Aircraft, Inc. ★ *James L. McKinley, Managing Director*

1523 EAST BROADWAY, HAWTHORNE, LOS ANGELES COUNTY, CALIF.

Learn UPHOLSTERING At Home!

A Money-Making Business of Your Own or a Hobby that Pays

Re-upholster your chairs, sofa, etc. — earn extra money in a Spare or Full Time Money-Making Business. We show you how through practical Home Training.

Course Offers Professional Upholsterer's Tools

With your interesting lessons you receive tools, material, and detailed instructions to do actual upholstering. Throughout your course you receive professional guidance to help you do the kind of upholstering that gives satisfaction and makes you money.

YOU GET THIS OTTOMAN

With your first lesson you receive the Frame, Springs, Webbing, Padding, etc. — all necessary materials to make and upholster this ottoman. Other jobs come easy.

SEND FOR COMPLETE INFORMATION TODAY

West Coast University, Extension Dep't. MI-119
1601 S. Western Avenue, Los Angeles 26, California

Please send me free illustrated booklet describing your Upholstering Course.

I am interested in upholstering as a career ☐ as a hobby ☐

Name.....

Street.....

City..... Zone..... State.....

TRAVEL for ★"UNCLE SAM"

START as high as $3,351 Year

Prepare NOW For Next Examinations

20,000 appointments each month

VETERANS GET SPECIAL PREFERENCE

Many examinations expected soon
City Mail Carriers
City Postoffice Clerks
Stenographers-Typists
Messengers,
Liquor inspectors—and many others.
40-Page Book on Civil Service FREE

Mail Coupon today—SURE ★

COUPON

FRANKLIN INSTITUTE
(Not Government Controlled)
Dept. X-78
Rochester 4, N. Y.

Rush to me, entirely free of charge, 40-page book with: (1) A full description of U. S. Government jobs; (2) A list of U. S. Government jobs; (3) Tell me how to qualify for a job.

Name .....

Address .....

..... Vet?.....

WORLD'S FINEST BAR BELLS
AT BARGAIN PRICES

8.95 UP

BUILD your chest, arms, thighs, neck as Nature intended! Have a whole new body in Less Than 3 Months—Only 5 Minutes a Day! 4 Million Men, Coast to Coast, 8 to 80, are successfully doing this. YOU CAN, TOO! Win scores of new friends and admirers—take the all-important, life-giving step toward rich, youthful energy and strength. Build your body—boost your paycheck—feel "like a million"!

GET DETAILS NOW

about Paramount Bar Bells and System, finest, most scientific of all health and strength development methods. Factory-Price Savings up to 30%. Send NOW for your "Power-Thru-Paramount" Self-Check Health Chart. It WORKS! It's NEW! It's FREE! Just say—"Send Chart." Write TODAY!

INDEPENDENT IRON WORKS, Dept. E
2416 E. 23rd St., Los Angeles 11, Calif.

TRI-STATE COLLEGE

B. S. DEGREE IN 27 MONTHS

66th Year.

World-Wide Enrollment

ENGINEERING—Courses in Civil, Elec., Mech., Chem., Aeronautical and Radio. Television. Also Bus. Admin., Acc't. and Sec. Science. Visitors welcome. See beautiful campus, well equipped laboratories. Graduates successful. Enter Jan., March, June, Sept. Write for Catalog. 6119 College Avenue, Angola, Indiana.

BE A NOTARY PUBLIC

Get paid for life for signing your name. Old legal-supply house, 22 cities, helps you get appointment by governor if you qualify. No training needed, no course to study. As a public notary your signature is important; you certify legal papers by signing, get paid. Money intake grows as you become known. Like compound interest. Income steady, for life. We equip you completely. Pay us after you are appointed—2 payments $12.50 each. That's all. Details free.

STATIONERS EXCHANGE **BOERNE 55, TEXAS**

NEW! ADVERTISING MACHINE

PRINTS & ILLUSTRATES PENNY POST CARDS

Easy to boost sales with *Cardmaster*. Thousands are doing it. Not a toy but a sturdy Advertising Machine *Guaranteed 5 years*. Get money-making facts today. Act now!

FREE An Illustrated Book of New Plans, Business Getting Ideas for your own business. Get it.

CARDMASTER, 1920 Sunnyside, Dept. 2011, Chicago 40

ITALIAN ACCORDIONS

All types, all models, Very best. Hand Made, Lowest prices. Buy direct from Factory representative and Save Money. Also Button Accordions, Chromatic Accordions and Concertinos. Send name and Address for FREE catalog.

ITALIAN ACCORDION MFG. CO.
7600 Cottage Grove Ave., Dept. MI-11, Chicago 19, Ill.

AMAZING CALENDAR WATCH

Tells minute, hour, & day of month

Most intelligent watch we ever saw; a triumph of Swiss craftsmanship! Gives exact minute and hour . . . then tells you what day of the month it is! So good that printed 1-year guarantee is included. Glow-at-night dial; timed and tested movement.

Send no money—10 day trial

Pay postman $9.95, plus tax and COD charges (or send check and we pay postage). Wear watch 10 days; return for refund if not completely delighted.

ONLY $9.95 plus tax

SWISS WATCH DISTRIBUTORS
Dept. T-11, Sandy Springs, Ga.

Dear Editor—

Use this letters column as you see fit—make it a complaint box, question box, suggestion box or even a soap box. But use it! Our only requirement is that you sign your name and keep 'em short, interesting and clean. Address mail to: MECHANIX ILLUSTRATED, Letters Editor, 67 West 44th Street, New York 18, N. Y.

Ode To McCahill

McCahill is the man for us
Informing us of each new bus,
Describing what is good or bad—
Or what is just too doggone sad.

Motor City's Dreamboats are
Not one whit like ol' T.M.'s car.
No jukebox grille, no skirts for Tom—
Just a block with the soup of an atom bomb.

No one-piece bodies that scrape the ground
Or gadgets that roll your windows down.
None of these from Detroit's "Bubs"—
For Tom it's a tach and knock-off hubs.

We'll stick by him through bright or black
If such false goods he'll give the sack.
And add our names to his petition
To end this bloated repetition!

Fred Petras
Minneapolis, Minn.

McCahill thanks you for the verse.
It couldn't be better; it could be worse.
But the editor hopes your versification
Won't start a trend in communication.

About Filthy Lucre

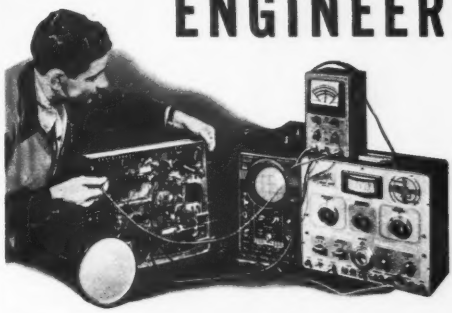
Why has there never been any mention of money as one of the most common carriers of diseases? Everyone handles money—the sick as well as those not immune to disease. It would be a great step forward if somebody invented a method for making money sanitary.

Robert J. Conroy
Detroit, Mich.

How true! In the meantime, however, if anybody has any filthy lucre he's worried about, just send the dirty old stuff to us. We promise to dispose of it in the best possible way. As a public service, of course.

[Continued on page 35]

Become an ELECTRICAL ENGINEER



Major in Electronics or Power

. . . B.S. Degree in 36 Months

The Electrical Engineering course offered by this non-profit, well-equipped Technical Institute and College is world-famous. Here you can earn your Bachelor of Science Degree in 36 months of continuous study. You get both practical, specialized training and a solid educational background in the basic sciences and Electrical Engineering. And, under the concentric curriculum, you become a certified Electro Technician or Electronics Technician in 12 months.

Choose the Course That Interests You Most

SERVICE
6 to 12 months
- Electricity
- Welding
- Refrigeration
- Heating

TECHNICIAN
12 to 24 months
- Radio and Television
- Electronics
- Electrotechnics (Power)
- Welding
- Refrigeration, Heating, Air Conditioning

PROFESSIONAL
36 months
- Electrical Engineering —B.S. Degree Major in Electronics or Power

Radio-Television Technicians

are needed throughout America's fastest growing industry. This certification can be yours in 18 months. All technician courses are credited toward the B.S. Degree.

* * *

Practical, military or academic training will be evaluated for advanced credit.

Faculty of 85 specialists. Over 1500 currently enrolled. 35,000 former students.

Write for new 48-page Pictorial Bulletin "Your Career"

Terms Begin Jan., April, July, Sept.

MILWAUKEE SCHOOL of ENGINEERING

Founded 1903 by Oscar Werwath

"Your Career"

MILWAUKEE SCHOOL OF ENGINEERING
Dept. MI-1149, N. Broadway & E. State, Milwaukee, Wis.
Without obligation send free bulletin "Your Career" and more details on course in .....
NAME..... AGE.....
ADDRESS .....
CITY..... ZONE..... STATE.....
☐ Check if World War II Veteran

SURPLUS BARGAINS

ASSEMBLE YOUR OWN BINOCULARS!
Complete Optics! Complete Metal Parts!
Save More Than ½ Regular Cost

GOVERNMENT'S 7x50 BINOCULARS
We supply Full Instructions

METAL PARTS—Set includes all Metal Parts—completely finished—for assembly of 7 X 50 Binoculars. No machining required. A sturdy Binocular Carrying Case is optional with each set of Metal Parts.
Stock #842-B **$39.40**
Postpaid, plus $4.80 for Case
—Total **$44.20**

OPTICS—Set includes all Lenses and Prisms you need for assembling 7 X 50 Binoculars. These are in excellent condition—perfect or near-perfect—and have new low reflection coating.
Stock #5102-B ..... **$25.00 Postpaid**
(These are standard American-made parts . . . not Japanese, French or German.)

NOTICE! If you buy both Binocular Optics and Binocular Metal Parts, add 20% Federal Excise Tax to above prices.
ARMY'S 6x30 BINOCULARS—We have complete Optics and Metal Parts. Write for Catalog B.
SLIDE PROJECTOR SETS—Consist of all unmounted lenses you need to make the following size projectors:
Stock #4038-B—2¼"x2¼" ..... **$3.35 Postpaid**
Stock # 4039-B—2½"x3½" ..... **$3.35 Postpaid**
Stock #4035-B—35 mm. ..... **$4.85 Postpaid**
SIMPLE LENS KITS!—THE LENS CRAFTERS DELIGHT! Fun for adults! Fun for children! Kits include plainly written, illustrated booklet showing how you can build lots of optical items. Use these lenses in photography for copying, ULTRA CLOSE-UP SHOTS, Michrophotography, for "Dummy Camera," Kodachrome Viewer, Detachable Reflex View Finder for 35 mm. cameras, Stereoscopic Viewer, ground glass and enlarging focusing aids. And for dozens of other uses in experimental optics, building TELESCOPES, low power Microscopes, etc.
Stock #2-B—10 lenses ..... **$1.00 Postpaid**
Stock #5-B—45 lenses ..... **$5.00 Postpaid**
Stock #10-B—80 lenses ..... **$10.00 Postpaid**
We have literally millions of war surplus lenses and prisms for sale at bargain prices. Write for Catalog "B"—Sent Free!
Satisfaction Guaranteed ***Order by Stock No.***

EDMUND SALVAGE COMPANY
BARRINGTON, NEW JERSEY

Don't Envy The PLUMBER·Be One

The Plumber Protects The Health of the Nation

Make $15 to $50 a Day

Every skilled workman will tell you Plumbers have the best of it. WINTER and SUMMER the Plumber is busy at top wages. No skilled Plumber is ever out of a job. Compare his opportunities with any trade. To the man with know how, Plumbing means profit. Investigate Universal Plumbing School. Not a "war born School," but a plumbing school developed and operated by plumbers since 1923.

Own Your Own BUSINESS

Have your own business and big profits with little other than training and a kit of tools.

JOURNEYMAN
Gets Good Salary

Master Plumbers own their own shop. A Journeyman works for a Master. With this training journeymen can depend on high wages.

BE A PLUMBER IN JUST 32 WEEKS
Learn With Tools—Not Books

No need ever serve an apprenticeship. Don't envy the plumbers big profits—enjoy them. Learn every trick of the trade—Leadwork — Blueprint for plan reading, etc. under Licensed Master Plumbers.

Over 7,000 Successful Plumbers Recommend This School

This system has made more than 7,000 plumbers. Investigate our past performance. If you like to work with tools this is your opportunity. Become a Plumber in America's largest and only school devoted exclusively to plumbing. Write today for FREE information.

G. I. Approved. Established 1923

UNIVERSAL PLUMBING SCHOOL
899 Holmes Street Kansas City, Mo.

NOW YOU TOO CAN BUILD 15 RADIOS

COMPLETE KIT $14.75

Absolutely No Knowledge of Radio Necessary
You Need NO Additional Parts
The PROGRESSIVE RADIO KIT
is THE ONLY COMPLETE KIT. Contains everything you need. Instruction Book, Metal Chassis, Tubes, Condensers, Resistors and all Radio parts.
The 36-Page Book written by Expert Radio Instructors teaches you to build radios in a Professional Manner. You start with a 1-tube receiver. Before you are done with this kit, you will have built 11 Receivers, 1 Public Address System and 3 Transmitters.

SPECIAL FREE OFFER!

Electrical and Radio Tester sent absolutely FREE with each Progressive Radio Kit. PLUS FREE membership in Progressive Radio Club. Entitles you to free expert advice and consultation service with licensed radio technicians.
Write for further information, or ORDER your KIT NOW! ONLY..... $14.75
Postage prepaid with check or money order
(Postage not prepaid with C.O.D. orders)

PROGRESSIVE ELECTRONICS CO., Dept. MI-19
479 Union Avenue Brooklyn 11, N. Y.

LEARN MEAT CUTTING

through actual practice. Profitable Meat Cutting and Self Service Meats taught easily, quickly. LEARN BY DOING at Toledo in just eight short weeks under actual market conditions. For beginners or men with experience. All subjects taught thoroughly and completely. Diploma. Job help. Get store of own. People must eat. School in operation over 25 years. Approved for GI training. Send today for FREE illustrated catalog. No obligation.
NATIONAL SCHOOL OF MEAT CUTTING, Dept. 52-N, Toledo 4, O.

EASY TO LEARN CODE

Learn or increase speed with an Instructograph—the Radio-Telegraph Code Teacher that takes the place of an operator-instructor and enables anyone to master code without further assistance. Available tapes from beginners alphabet to typical messages on all subjects. Speed range 5 to 40 WPM. Always ready—no QRM. Thousands have "acquired the code" with the Instructograph System. Write today for convenient rental and purchase plans.

INSTRUCTOGRAPH COMPANY
4701-X Sheridan Road, Chicago 40, Illinois

LAW FREE BOOK

Your FREE copy of "The Law-Trained Man" shows how to gain prestige and greater earnings through Blackstone home law study. All instruction material furnished including 18-volume Law Library written by 65 well-known law authorities. Lawyers, judges among our graduates. LL.B. degree. Low cost; easy terms. Write today.

BLACKSTONE COLLEGE OF LAW 225 N. Michigan Ave. Dept. 68, Chicago 1, Ill.
A Correspondence Institution Founded in 1890

HYDROPONICS

24 Page FREE Illustrated Book

Grow *out-of-season* vegetables, rare flowers or house plants by hydroponics WITHOUT SOIL. Start a fascinating hobby or profitable business *in your home.* No experience needed for top results. Small space gets *BIG RETURNS.* Easy, clean, pleasant way to grow *any* plant indoors or out *every day in the year.* Fast growth, increased yields, unlimited *PROFIT OPPORTUNITIES.* Send postcard today for free illustrated book showing how others from every state are succeeding in this *wide open field.*

CHARLES C. GILBERT & CO., 834 W. IVY STREET, SAN DIEGO 1, CALIF.

Big money in spare time! learn at home Tune pianos in 30 days $

No musical knowledge needed. Piano tuners in great demand everywhere. Train under experts. Learn with phonograph recordings in 30 days. We furnish recordings, instruction books and professional tools (including record player if needed). We show you how to line up part or full time work for big earnings. Send for FREE literature today.

CAPITOL CITY TUNING SCHOOL
Dept. 1145 211 E. Michigan Ave., Lansing, Michigan

ART FOR PLEASURE AND PROFIT

BE AN ARTIST! LEARN TO DRAW AT HOME IN YOUR SPARE TIME

TWO BIG ART OUTFITS GIVEN

As soon as you enroll, we send you the first of the TWO complete Artists' Outfits, including all the material you need to start the course. Later in the course you receive the second, advanced outfit . . . all at no extra cost.

Read What These Graduates Say:

FREE LANCE ARTIST— *R. H. Woodruff of Cleveland, Ohio, was more than paid for his WSA training by doing sign and poster work. (4-46)*

STAFF ARTIST AND CARTOONIST—*G. W. Thomas, Los Angeles newspaper artist, says: "WSA is Number One school in U. S. A." (1-48)*

WRITE FOR FREE BOOK
"ART FOR PLEASURE & PROFIT"

Tells about our method of instruction and commercial opportunities for you . . . also about WSA students, what they say, and reproductions of their artwork.

APPROVED FOR VEERANS

EST. 1914

WASHINGTON SCHOOL OF ART

Prepare yourself for a pleasant, profitable Art career. COMMERCIAL ART, DESIGNING, CARTOONING —all in one complete modern home study course. Many pleasant art positions available in this great field. You can become your own boss. Work at home on your own time. Many students earn extra money while learning by designing posters, rendering signs, lettering, etc. W. S. A. is now in its 35th successful year of training men and women. No previous art experience necessary, we teach you step-by-step for professional art jobs in advertising, television, newspaper and magazine publishing, department stores, printers, engravers, art studios, etc. Get the facts now. *Low cost—only $5 monthly.*

FREE BOOK gives details

WASHINGTON SCHOOL OF ART, Studio 2011R
1115—15th St., N. W., Washington 5, D. C.

Please send me full information and your Free Book, "Art for Pleasure and Profit."

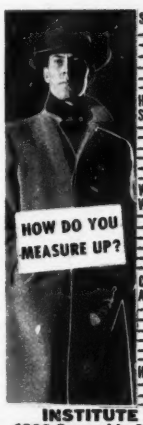
Name..... Age.....
(Please print)

Street .....

City..... Zone..... State.....

FIND OUT FREE!

HAVE YOU GOT WHAT IT TAKES?



SUCCESS — HOME STUDY — WILL TO WIN — CHARACTER — HEALTH

to be a FINGER PRINT EXPERT or TRAINED INVESTIGATOR?

Send for free IAS Qualification Questionnaire. If in our opinion your answers indicate that you "have what it takes," then you will receive **absolutely free** the famous "Blue Book of Crime" . . . plus full details on how to train at home in Crime Detection and Finger Printing! IAS graduates are key men in over 800 Police Bureaus. See if YOU can train for this exciting, steady, "good pay" work! No obligation. No salesman will call. Write today, stating age.

INSTITUTE OF APPLIED SCIENCE
1920 Sunnyside Ave., Dept. 2358, Chicago 40, Ill.

INSTITUTE OF APPLIED SCIENCE
1920 Sunnyside Ave., Dept. 2358, Chicago 40, Ill. ★

Gentlemen: Without obligation or expense on my part, send me your qualification questionnaire. I understand that upon receipt of my answers you will immediately advise me if you think they indicate that I have a chance to succeed in criminal investigation or finger print work. Then I will receive FREE the "Blue Book of Crime," and information on your course and the 800 American Identification Bureaus employing your students or graduates.

Name.....

Address..... RFD or Zone.....

City..... State..... Age.....

YES, you can insulate your home easily, quickly, and at low cost with Gold Bond Rock Wool Insulation. Light, easy-to-handle batts slide right in between attic floor joists or between rafters. Fireproof! Keeps homes warmer in winter, cooler in summer; pays for itself in fuel savings. For full benefits order "full-thick" Gold Bond Rock Wool Batts from your local Gold Bond Lumber and Building Supply Dealer today!

FREE BOOK OF SUGGESTIONS

NATIONAL GYPSUM COMPANY,
Dept. D-7, Buffalo 2, New York

Gentlemen: Send free copy of new Booklet, "Live Better for less!" showing full details on the benefits of insulation.

Name .....

Street.....

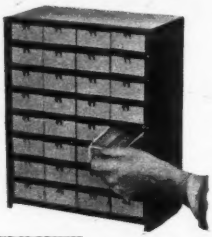
City..... *State*.....
(Please print name and address)

The JIFFY metal CABINET

YOUR ANSWER TO SMALL ITEMS STORAGE

at home, office, and shop (IDEAL GIFT, TOO)

So handy to keep nuts, bolts, screws, nails, parts, washers, stamps, hobbyists' needs, etc., at your fingertips.



THIS 32 DRAWER UNIT ONLY **5.95** POSTPAID

Stop searching, get a 32 or 64 drawer jiffy to keep those small items that usually get mislaid. Spot welded steel, gray enamel finish, metal drawer guides. Dividers included with aluminum drawers make possible three compartments per drawer. Looks good anywhere. Send check or money order, please—no C. O. D.'s. Prices below. Your money refunded if not satisfied. Dealers write for quantity discount.

SPECIFICATIONS	WITH ALUMINUM DRAWERS	WITH CARDBOARD DRAWERS
32 Drawer Unit 6" Deep 12⅜" Wide 15¼" High	Dividers and Index Cards Included One piece rustproof aluminum drawers for heavy service—good for work bench and industry use.	Suitable for most home uses. Heavy board kraft covered. Metal drawer pulls.
64 Drawer Unit 6" Deep 25½" Wide 15¼" High	**32 drawer $8.95**	**32 drawer $5.95**
Drawer Size 1¼" Deep 2¾" Wide 6" Long	**64 drawer 15.95**	**64 drawer $9.95**
	Marproof Rubber Feet included with all cabinets	
	POSTAGE PAID	POSTAGE PAID

Ohio orders add 3% sales tax.

KAYTEE PRODUCTS, Dept. A, Box 588, Canton, O.

NOW! Build Your Future On DIESEL Opportunities

LOOK around you. See the way tractors, trucks, buses, railroads, ships, power plants and equipment of many kinds are "going Diesel." Every day new opportunities are opening—in industrial and farming communities—for trained men who can install, maintain, operate and repair Diesel engines. Plan now to build your future in this growing field.

Diesel Knowledge is Earning Power

Now, you can begin learning DIESEL in spare time at home. UEI practical training teaches you, step by step, how Diesel engines operate, how fuel systems work, repairs, accessories and auxiliary equipment; a world of Diesel "know how." Also new scientific Motor Tune-Up covering auto ignition systems, generator, tune-up procedure, etc. Includes actual practice on Diesel equipment in our shop under expert guidance. For 22 years UEI training methods have helped mechanically inclined men better themselves.

Send Coupon for FREE FACTS

NOW IT'S UP TO YOU!

Coupon below brings you all the facts without cost or obligation. Get going today! MAIL COUPON NOW

UTILITIES ENGINEERING INSTITUTE *Founded 1927*
Diesel Division
2521 Sheffield Ave.,
Dept. DJ-7,
Chicago 14, Ill.

UTILITIES ENGINEERING INSTITUTE, Diesel Division
2521 Sheffield Ave., Dept. DJ-7, Chicago 14, Ill.
Please send me Free Facts about Diesel opportunities and training.

NAME _____ Age _____

ADDRESS _____

CITY _____ Zone or County _____ STATE _____

☐ Check here for special information if you are under 17.

FREE! SAMPLE!

GLOWS IN THE DARK!

AN EASY WAY TO MAKE BIG MONEY

Be the first to sell sensational luminous house numbers, light switch plates, wall protectors, cord pulls, novelties, etc. Also luminous pictures, statues, decals, and a host of religious, nursery and other objects THAT GLOW IN THE DARK. Sell on sight. *Get into this new and growing industry.* ENORMOUS DEMAND . . . NO COMPETITION . . . BIG PROFITS. Represent a large manufacturer, established over 35 years. Write AT ONCE for liberal MONEY-MAKING offer and **free sample** to show you how they GLOW IN THE DARK.

Madison Mills, 303 Fourth Ave., Dept. C-6. **New York 10, N.Y.**

LOCKSMITHING & Key Making

PRACTICAL UP-TO-DATE COURSE—ONLY $3.95

Easy-to-learn modern information for self-instruction. How to work on locks, de-code, make master-keys, repair, install, service, etc. For every handyman, home owner, carpenter, mechanic, service station operator, fix-it shop, hardware dealer, gunsmith. 53 plain illustrated lessons. **FULL PRICE ONLY $3.95.** SEND NO MONEY. Just pay postman plus C.O.D. postage. Or send $3.95 with order, we'll ship postpaid. Satisfaction guaranteed or refund.

NELSON-HALL CO., 1139 S. Wabash Ave., Dept. L-3, Chicago 5, Ill.

A BIGGER, BETTER CLASSIFIED SECTION

LOOK ON PAGE 48

DE LUXE SHEFFIELD CHRONOGRAPH WRIST WATCH

Has everything—plus new low price. It's a timekeeper, stop watch, measures speed of planes, cars, horses, etc. Sweep second hand, chrome case, unbreakable crystal, Swiss movement. Sold to $29.95. Send cash, check, or C.O.D.

9.75 Plus 9% Tax

WAYNE SALES COMPANY
423 American Ave., Long Beach 12, Calif.

LIMIT ONE — Guaranteed by mfgr. for FULL YEAR

ANALYZE *Handwriting*

Try it FREE, use it—to understand yourself and others in business and social life—more clearly than you ever thought possible. Many use their knowledge of handwriting to make more money full or part time. Simply send your name today for FREE ILLUSTRATED lesson. No obligation. Must be over 21. International Grapho Analysis Society, Inc., 209 Wilhoit Building, Springfield 4, Mo.

HOT RUNNING WATER!

Attaches easily, quickly to any standard faucet. Regulates temp. by turning faucet. Operates AC or DC. Comes with 8-ft. rubber cable and plug. Our DELUX heater has delighted many thousands of users. Send $3.95 cash, check, or M.O.—we will ship prepaid or, if you wish, we will ship C.O.D.—you pay postman $3.95 plus few cents postage. Order 3 for $10—save $1.85.

METROPOLITAN ELECTRONICS CO.
Dept. 116, 106 Fifth Avenue, New York 11, N. Y.

Dear Editor

[*Continued from page* 31]

Ghosts At Work!

Your ghost story (I Psychoanalyze Ghosts, September MI) was certainly an unbelievable tale. Until I read a current news story, that is.

I wonder if MI readers heard about the 14-year-old boy in Mount Ranier, Md. who was plagued by a "devil" which threw him out of bed, knocked over chairs he sat in and did other such strange things. Witnesses swore they saw nothing.

Maybe Dr. Fodor, the author of your story, could have solved that mystery, too. It certainly seems to follow the pattern he described. Yours for fewer ghosts and more ghost stories.

S. N. Tabakin
Chicago, Ill.

The Amazing Mr. M

My faith in Tom McCahill is forever confirmed in noting that he not only posed for two of MI's cover photos (August) but took the pictures himself. Don't ever let that man go!

Robert R. Lindsay, Publisher
Hot Rod Magazine
Los Angeles, Cal.

Oops! Looks like you caught us with our cover credits down. Actually, though, the pictures were taken by Tom's better half—his beautiful wife Cynthia.

What Car Owners Want—I

Here's what the average $2000 car owner prays for but never gets:

1. 30 miles to a gallon
2. better carburetion
3. no tin junk on sides
4. airplane-type air vents instead of no-draft windows.
5. all-round bumper
6. narrow tires and higher wheels for winter driving
7. better braking system
8. sealed cooling system
9. improved gearing
10. supercharger
11. better lubricating system

B. A. Taylor
Hamilton, Ont.

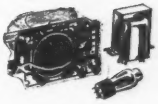
[*Continued on page* 37]

FREE

ALLIED'S NEW 1950 RADIO CATALOG!

SEND FOR THIS 196-PAGE BOOK

Save on Everything in Radio



BUILDERS' KITS
TELEVISION SETS
HI-FIDELITY SOUND
AMATEUR GEAR
THOUSANDS OF PARTS
TUBES, TOOLS, TESTERS
BOOKS & DIAGRAMS

Everything for Servicemen, Engineers, Experimenters, Builders, Soundmen, Amateurs

Get Radio's Leading Buying Guide!

Get everything you need from the world's largest radio supply house—and save money on every purchase! ALLIED's new 196-page 1950 Buying Guide offers widest selections of top quality equipment—ready for speedy, dependable shipment at lowest prices. Have the advantages of expert, friendly service, and guaranteed satisfaction on every purchase. To get more for your radio dollar, send today for your FREE 1950 ALLIED Catalog, the preferred Buying Guide to *everything* in radio and electronics.

ALLIED RADIO

FREE CATALOG

ALLIED RADIO CORP.
833 W. Jackson Blvd., Dept. 6-L-9
Chicago 7, Illinois

☐ Rush FREE 196-Page Catalog

Name.....

Address.....

City.....*Zone*....*State*.....

Can a Man MY Age Become a Hotel Executive

Even Though He Has No Previous Hotel Experience?

Would you like to step into a well-paid position as Hotel, Restaurant, Inn, or Club Manager, Purchasing Agent, Social Director or Assistant Manager? Would you like to look forward happily to the future? The success of Lewis graduates from 18 to 50 PROVES you can—though you have no experience in hotel work.

Harry E. Roorbach, Veteran, Wins Success as Hotel Executive

"While I was in the hospital awaiting discharge from the U. S. Navy, I enrolled for Lewis Training. Shortly after I had completed the course, the Lewis National Placement Service informed me of an opening near my home.

"At present, I am Night Manager in the largest hotel in Rochester. I owe my success to the Lewis course."

Step Into a Well-Paid Hotel Position
FREE Book Gives Fascinating Facts

Our FREE Book, "Your Big Opportunity," explains how you can qualify for a well-paid position at home, in leisure time. It tells how you are registered FREE of extra cost in the Lewis National Placement Service. Most important, it shows how you can be a Lewis Certified Employee—certified to "make good" when placed in a position. Mail the coupon NOW!

Course approved for Veterans' Training.

Lewis Hotel Training School
Room PS-6424, Washington 7, D. C.

34 SUCCESSFUL YEAR

Send me the Free Book, "Your Big Opportunity," without obligation. I wish to know how to qualify for a well-paid position at home, in my leisure time.

Name .....

Address .....

City ..... Zone... State.....

☐ Check here if eligible under G.I. Bill of Rights.

YOU ARE IN DEMAND IF YOU CAN DRAW!

If you like to sketch, write for FREE TALENT TEST. Splendid opportunities for *trained* artists. Find out if you have talent worth developing.

Free

ART INSTRUCTION, INC.
Dept. 11069 • Minneapolis 15, Minnesota

Send me your FREE Talent Test.

Name_____ Age_____

Address_____

City_____ Zone_____

County_____ State_____

Occupation_____ Phone_____

BARBELLS

95 POUND SET
Only $10.80
Extra Plates 10c lb.

We have been selling the finest barbell equipment since 1928. We operate our own foundry and sell direct to you at a very low profit. No other company can match our low prices.

Send for our FREE Barbell Catalog.

BUR BARBELL CO.
LYNDHURST 35
NEW JERSEY

JET PERFORMANCE for your car with Vapojet

This aircraft developed water-oil vapor injector is designed to give faster pick-up, smoother running power and tends to eliminate carbon, vapor lock and overheating. Users of the new Vapojet report 25% more mileage per gal. Fits all car, tractor and boat engines. Specify car and no. of cyl. Money Back Guarantee if returned in 30 days. **$9.75 ppd.** $1.00 deposit on C.O.D. orders. Agents Wanted.

VAPOJET MFG. CO., 11424 Biona Dr., Dept. MI-11, Los Angeles 34, Calif.

FREE BARGAIN CATALOG of BOOKS

25,000 books of all publishers listed in our 55th Annual Bargain Catalog of 256 pages. Old-time favorites—latest "best sellers." Reference, Fiction, Juvenile, History, Scientific, etc. Supplying schools, colleges, libraries and thousands of individual customers. **Send postcard today for our new 1950 catalog, "Bargains in Books."**

THE BOOK SUPPLY COMPANY, Dept. 240
564-566 West Monroe Street — Chicago 6, Illinois

THE PERFECT GIFT

- Swiss precision movement — $5.95 Plus 10% Fed. Tax
- Stainless steel
- Sweep second hand — WOMAN'S MODEL
- Radium dial — $6.95 Plus 10% Fed. Tax
- Genuine pigskin
- Gift box

Send only $1.00 with order. Pay balance plus postage on arrival. We pay postage if you enclose payment in full with your order.

GUARANTEED JEWELRY COMPANY
1348 A Morrison Avenue, New York 59, N.Y.

Play GUITAR in 10 DAYS

OR GET YOUR MONEY BACK!

Let Ed Sale teach you to play with his famous diagram-photo system. Book contains 53 photos, 43 diagrams showing exactly how to place your fingers. Gives you 110 popular songs, words and music—along with complete, easy to learn instructions. Imagine your joy when you find after only two weeks you are playing beautiful music! Amaze your friends! Be the life of the party!

INSTRUMENTS SUPPLIED on cash or credit, ask for Price List and Credit Plan.

SEND NO MONEY. Pay postman **$1.95** Plus Postage

ED SALE, Dept. 3, Point Pleasant, New Jersey

LEATHERCRAFT
COPPER TOOLING
TEXTILE PAINTING

Make your spare time PROFITABLE. Send today for FREE illustrated catalog showing everything you need.

KIT KRAFT, 7377 Melrose Ave., Dept. CD-11, Los Angeles 46, Cal.

Dear Editor

[*Continued from page 35*]

● Parson Tests the Volkswagon

I have learned by experience that a car with the motor in the rear is what America needs. I bought and owned a German Volkswagon for 14 months and I was more than pleased with the car.

You may not sit in the very front of it, but you do have a visibility that American cars don't have. The weight of the car is 1800 pounds but the motor weighs only 95 pounds. It's built low enough to the ground so that it is hard to turn over even if you try.

In the summer you don't have the heat from the motor, and in the winter time you don't freeze either as you pull a button like a choke and you have hot air coming from your air-cooled motor out of four places along the floor. One on each side of the windshield acts as defrosters, too.

The car will go 75 mph in fourth gear and on level roads. You also get around 35 miles to a gallon. In 14 months I traveled over 65,000 kilometers and really enjoyed every minute of this rear-engined car.

Pfc. Edward Parson
Bremerhaven, Germany

Here's how to make sure you never miss a copy of MECHANIX ILLUSTRATED, the science, crafts and hobbies magazine that has everything:

Please enter my Subscription to MECHANIX ILLUSTRATED

☐ *One year: $1.80

☐ *Two years: $3.50

*In Canada, U.S. & possessions

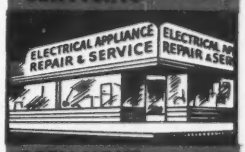
NAME_____ADDRESS_____

CITY_____ZONE_____STATE_____

Mail to: MECHANIX ILLUSTRATED, Circulation Dept., Fawcett Building, Greenwich, Conn.

FREE! MY PLAN FOR YOUR SUCCESS

Learn ELECTRICAL APPLIANCE REPAIR and SERVICING



OPEN YOUR OWN SHOP

PTS training is more than a home study course in electric appliance repair and service. It gives you the know-how on the operation of your shop from a business standpoint—what to charge — how to get customers. Everything possible is done to assist you to start on the road to your success.

EARN WHILE YOU LEARN

You can actually start earning before your course is finished. I send you your first lesson showing you easy jobs that can be done in your SPARE TIME AT HOME. Remember, one good repair job will pay for the cost of your course. NO BIG OVERHEAD needed. Start in your garage, basement, attic or spare room. When you are ready to expand, I will give you the benefit of my advice and experience.

Yours! AT NO EXTRA COST
Big kit of tools and ELECTRICAL APPLIANCE TESTER

Free! Big book containing all the details of my plan for your success WRITE NOW!

SPARE OR FULL TIME

Want a good-paying business — a job in a fast-growing industry? Learn electrical appliance repair and service. I will teach you this interesting, good-paying business. The EASY step-by-step home study method, taught by PTS, prepares you NOW to reap lush profits to be made in this unlimited field. Have YOUR OWN BUSINESS — spare or full time — prepare for one of the many openings for trained men.

ACT NOW

Millions of new appliances in homes — millions of new homes being wired for electricity assures hundreds of customers in nearly every neighborhood.

EASY TO LEARN!

Men of all ages, yes, even the man of 60 can get into this ever expanding field—a business well suited to men who like to use their hands—a REAL OPPORTUNITY for the practical man who is not happy in his present job. Get started NOW—send for FREE BOOK giving all details.

YOU LEARN TO REPAIR

Vacuum cleaners, Washing machines, Lamps, Motors, Irons, Ranges (gas and electric), Auto electricity, Garbage disposal units, Fluorescent lights, Electric shavers, Refrigeration, House Wiring.

USE THIS COUPON

PACIFIC TRAINING SCHOOL — Dept. M911
7217 So. Broadway, Los Angeles 3, Calif.
Please send me your FREE BOOK.

NAME_____AGE_____

ADDRESS_____ZONE_____

CITY_____STATE_____

a small investment will establish you in . . .

Your OWN Business

Write For FREE Booklet

Patented

We are NOW enlarging our organization of U.S.A. and Canadian DURACLEAN dealers, in territories still open. Here is an opportunity to **BE YOUR OWN BOSS** . . . to become financially independent with a business of your own! Your gross profits are up to $15 and $20 a day on EACH of your service men.

You become a fabric specialist, providing the proper cleaning and moth protection for upholstery and floor coverings. You use the proven, successful methods of long established dealers. Service is rendered right **in the home**, office, or public buildings without removing furnishings. Services Nationally Advertised in Quality Magazines.

DURACLEAN Service was established **18 years ago** as an improved method for cleaning and revitalizing rugs and furniture. No harsh machine scrubbing. No soaking or shrinking. No inconvenience for the customer. Fabrics ready for use again same day.

DURAPROOF is another year 'round service. Makes fabrics and rugs **repellent** to moths and carpet beetles. You give customers a 4 YEAR WARRANTY of Protection.

These services have a waiting market . . . a big repeat business. Write today! A letter and 16 page illustrated booklet will explain everything—Easy Terms . . . protected territory.

- No Overhead Expense
- No Shop Necessary
- No Experience Needed
- You Learn Quickly, Easily
- Short Hours . . . Large Profits
- Service Nationally Advertised

Don't delay! Territories are limited. Remember, just a moderate payment, easy terms, and the opportunity to become financially independent in **YOUR OWN LIFETIME BUSINESS!**

● See our column Service "ad" in October Liberty ●

Duraclean Co. 9-170 Duraclean Bldg. Deerfield, Illinois

OFFERS BIG MONEY—INDEPENDENCE

Learn in spare time at home. NEW Shop Method Training System. Work as many hours as you wish—the Electrical Equipment Technician is his own boss. It is not unusual for a technician to charge on the basis of $5.00 to $6.00 an hour!

NO PREVIOUS EXPERIENCE NEEDED

We furnish everything! Tool kits, training kits, including the famous Christy trouble-detecting ELECTRONIC KIT. **Plus** illustrated instructions written in simple, easy-to-understand language, chock full of photographs and drawings. Shows you how to repair factory and household electrical units Power machinery, refrigerators, washing machines, vacuum cleaners, irons, etc. Gives you a working knowledge of electricity, welding, nickel plating, etc. Shows how to build power tools you need, how to solicit business and what to charge. Many report paying for their entire course, tools, etc. on earnings made at home while learning!

FREE BOOK SENT TO YOU

Send your name for FREE booklet on Electrical Equipment Servicing and instructions for paying us later from your EARNINGS WHILE LEARNING!

CHRISTY TRADES SCHOOL

Dept. D-7305 4432 N. Kedzie, Chicago 25, Ill.

HANDI-SCOPE

POWERFUL MICROSCOPE

For Machinists, Hobbyists, Photographers, Doctors, Engineers, Students, etc.

- Sharp Fine-Focus Adjustment
- 20-Power, Compound System
- Wide Undistorted Field
- No Special Light Source Needed

ORDER NOW!

Hundreds of practical uses in home, school, office, shop, farm, etc. Easy to use—handy to carry. Sold on money-back guarantee. Send check or money order TODAY!

$4.95 POSTPAID

BUHL OPTICAL COMPANY

Desk C-100, 1009 Beech Avenue, Pittsburgh 12, Pa.

YOU CAN NOW BUY WORLD FAMOUS **YORK** BARBELLS FOR AS LOW AS $6.95

Oldest and Largest in the World!

FREE catalog on request.
Write to: YORK BARBELL CO.
YORK, "MUSCLETOWN," PA. Dept. M1

GOOD MONEY IN WEAVING

Earn money **at home** weaving rugs, carpets, etc., from old rags or new yarn—in your community! No experience necessary. 31,000 doing it with easy running **Union Looms** costing less than $50.00! Send for our **free booklet** today.

UNION LOOM WORKS

117 Factory St. BOONVILLE, N. Y.

GEIGER COUNTERS

FOR PROSPECTING, INDUSTRIAL AND LABORATORY USE

Write Today for Full Details and Prices

OMAHA SCIENTIFIC SUPPLY CO.

DEPT. J2, 3601 N. 24th, OMAHA 10, NEBR.

NAME PLATES

For Desks, Doors, etc.

ONLY $1.00 Pre-Paid

Lamicoid Plastic—2"x6"x1/16"—15 letter limit per line. Mounted on solid walnut, felt base—$2.50. Sorry no COD's. Others in brass or plastic made-up to your specifications.

K. P. S. ENGRAVERS 76 Eldert St. Bklyn. 7, N. Y.

MAKE MONEY!

RAISE CHIN-CHIN CHINCHILLA RABBITS

VALUABLE BREEDERS! PEDIGREED! PROFITABLE! EASY! PLEASANT!

Extra Profits from gorgeous Furs, Delicious meat, etc.

Free illustrated Booklet—Write Today!

WILLOW BROOK FARM, SELLERSVILLE 17, PA.

World's Largest Breeder of Chinchilla Rabbits

PLASTICAST

THE GREATEST THING IN PLASTICS!

A NEW HOME INDUSTRY AND HOBBY!

We have combined two of our most popular Kits into one **GIANT COMBINATION PLASTICS OUTFIT** as described;

PLASTICAST . . . a transparent liquid plastic; can be poured into ANY kind of mold or container. Hardens in a few minutes into a beautiful transparent solid, clear-as-glass, tough-as-steel plastic! No tools, equipment or skill required. *Our casting plastics are as easy to use as pouring water out of a glass!* Ideal for imbedding pretty flowers, butterflies, photos, souvenirs, biological specimens, etc. Makes a PERMANENT and ATTRACTIVE display! Make beautiful jewelry, novelties, etc. Casts easily into any shape or form.

HERCULOX . . . liquid plastic; works same as above but hardens in 5 minutes into a very attractive white opaque solid. *A general all-purpose plastic.* Can easily be made to imitate Ivory, Onyx or Marble. May be dyed any color, cast into ANY shape, used for ANY purpose. Extremely hard and durable. Ideal for statuary, figurines, novelties, gadgets, models, tools . . . a million useful things! In addition, COMBINATION OUTFIT contains 3 attractive molds for making about $100.00 worth of novelties, dye, pipette, hardeners, measure, imbedding material, jewelry accessories and instruction manual.

COMBINATION PLASTICS OUTFIT, Cat. No. 636, postpaid **$4.95**
PLASTICAST OUTFIT ONLY, complete with 3 molds **$3.50**
HERCULOX OUTFIT ONLY, complete with 3 molds **3.50**

FREE!

Let us show you how extremely easy it is to make beautiful and useful things out of LIQUID PLASTICS, LIQUID MARBLE, LIQUID IVORY, LIQUID GLASS, CERAMICS, ETC . . . *as easy as pouring water out of a glass!* Make novelties, jewelry, gifts, artware, gadgets, toys, ceramics . . . *a million useful things!* We supply everything—**MATERIALS, INSTRUCTIONS AND BUYERS!** Send only 25c for 1. Big catalog of 300 casting materials, molds, and accessories, 2. A beautiful CAMEO free (to show you what you can do), and 3. Actual **INSTRUCTIONS** on how to cast and start in the **CASTING BUSINESS!** Send 25c today—*this may be the lucky coin that will start the most fascinating and profitable phase of your life!* (Catalog only—10c)

TERMS: We pay the postage (U.S.A. only) if full cash accompanies order. C.O.D. accepted (U.S.A. only) if $1.00 deposit included for each item ordered.

DEALERS: WRITE FOR CATALOG, DISCOUNTS & PROMOTIONAL MATERIAL.

PLASTICAST COMPANY (DEPT. H)

4637 N. Kedzie Ave. Chicago 25, Ill. *(Write to nearest address)* **P. O. Box 987 Palo Alto, Calif.**

CANADIAN CUSTOMERS, please order directly from: CANADIAN INDUSTRIAL PLASTICS, LTD., 1056½ Pender West, Vancouver, B. C.

WASHES DISHES IN JIFFY!

BRAND NEW . . . Nothing else like it. Amazing "Sponge" Dish Cloth washes dishes lightning fast. Replaces messy dishrags. Suction action works like magic. Dishes gleam like a mirror. *Truly a Godsend to busy housewives.*

SAMPLES FOR AGENTS

Sample offer sent immediately to all who send name at once. A penny postal will do. SEND NO MONEY—JUST YOUR NAME.

Kristee Co., 779 Bar St., Akron, Ohio

Command Bigger Money!

STUDY LAW

STUDY AT HOME for Business Success and LARGER PERSONAL EARNINGS. 40 years expert instruction—over 114,000 students enrolled. LL.B. Degree awarded. All text material furnished. Easy payment plan. Send now for FREE BOOK—"Law and Executive Guidance." It explains the course—how you may enroll and the many ways you may profit from Law Study. Write TODAY to:

G. I. Approved.

AMERICAN EXTENSION SCHOOL OF LAW

Dept. 20-X, 646 N. Michigan Ave., Chicago 11, Ill.

How to Make YOUR Body Bring You FAME

Instead of SHAME!

Will You Let Me Prove I Can Make You a New Man?

This is an actual snapshot taken at the beach.

I KNOW what it means to have a body that people pity! I was once a skinny, 97-lb. weakling—such a poor specimen that I was constantly self-conscious, embarrassed. But later I discovered the secret that turned me into the holder of the title, "The World's Most Perfectly Developed Man." I'd like to prove that the same system can make a NEW MAN of YOU!

7 DAY TRIAL OFFER

I don't say I can do all this for you in 7 days. But I DO want to prove I can show you enough results in even THAT short time to convince you that my system of *"Dynamic Tension"* will give you the kind of body you have always longed to have!

Do you want powerful shoulders—a fine, deep chest—biceps like iron—arms and legs rippling with strength—a stomach ridged with sinewy muscle—a build to be proud of? Then let me prove that *"Dynamic Tension"* is what you need.

FREE BOOK It costs only a stamp—or a postcard—to mail coupon below. I'll send my new, free book, "Everlasting Health and Strength." It tells about my *"Dynamic Tension"* method; shows, from actual photos, how I have developed my pupils—explains about my 7 DAY TRIAL OFFER. Charles Atlas, Dept. 6Z, 115 E. 23rd St., New York, N. Y.

Mail Coupon Now for FREE Book

CHARLES ATLAS, Dept. 6Z
115 East 23rd Street, New York, N. Y.

I want the proof that *"DYNAMIC TENSION"* will help make a new man of me—give me a healthy, husky body and big muscle development. Send me your free book, "Everlasting Health and Strength."

Name..... Age.....
(Please print or write plainly)

Address .....

City..... State.....

Become an

ACCOUNTANT—

Expert Bookkeeper—C. P. A.

The demand for skilled accountants—*men who really know their business*—is increasing. National and state legislation is requiring of business much more in the way of Auditing, Cost Accounting, Business Law, Organization, Management, Finance. Men who prove their qualifications in this important field are promoted to responsible executive positions.

Free Book—"Accountancy, the Profession that Pays"

Knowledge of bookkeeping unnecessary. We train you from ground up, or according to your individual needs. Low cost: easy terms.

Send name and address on the lines below for *free* 48-page book describing the LaSalle accountancy training and the opportunities in this highly profitable field.

LASALLE EXTENSION UNIVERSITY *A Correspondence Institution*

417 S. Dearborn St., Dept. 11493-H, Chicago 5, Ill.

Name.....

Address.....

City.....*Zone*....*State*.....

Learn A Trade NOW!

PRACTICAL SHOP TRAINING!

In Our Chicago Shops

- ☐ AUTO MECHANICS
- ☐ DIESEL MECHANICS
- ☐ REFRIGERATION
- ☐ BODY-FENDER
- ☐ WELDING—ARC and GAS
- ☐ MACHINIST
- ☐ PIANO TUNING

Above Approved For G.I.'s and Civilians

One of America's Leading Practical Schools
7 Floors of Fully Equipped Shops
Over 48,000 Successful Graduates
Expert Individual Instruction
Learn by Doing—Low Living Expense
Established 1902—Day and Evening Classes

Also the following Home Study Courses

☐ PLASTIC ☐ REFRIGERATION ☐ DIESEL

—CALL IN PERSON OR MAIL THIS AD TO—

GREER SHOP TRAINING

(Desk 11) 460 South State St., Chicago 5, Ill.

Please send without obligation free information regarding trade checked above. (Specify whether you are a Veteran ☐ or Civilian ☐)

Name..... Age.....

Address .....

City..... State.....

Chronograph Wrist Watch

LOWEST MARKET PRICE $7.25

Sweep Second Hand; Precision Workmanship; Rugged Shock-resistant case; Radium hands and numerals; Leather strap. It measures distance, speed of cars, planes, horses and other moving objects. It's a time keeper, stop watch, telemeter, tachometer. ONE YEAR WRITTEN GUARANTEE and full operating instructions enclosed with each watch. SEND NO MONEY. Mail your order today. Pay postman $7.25 plus 10% Federal tax. Total $8.00 plus postage. Or send cash (money order or check) with your order and save postage charge.

MARDO SALES CO., Dept. 2003
480 Lexington Ave.
N. Y. 17, N. Y.

BARBELLS

Finest Quality.....$8.98 up

FREE CATALOG

Send today for big new 4 color fully illustrated free catalog of BARBELLS, Dumbbells and Health equipment. Free—world famous $15.00 Dan Lurie Barbell and Dumbbell training courses with every purchase.

DAN LURIE BARBELL CO.
Dept. 150L, 1729-1M Rockaway Parkway Brooklyn 12, N.Y.

DRAW YOUR OWN CARTOONS WITH THE KARTOON KADOODLER

A new ingenious device of 22 BASIC FORMS—All you need is pencil and paper for you to start making your own FUNNY CARTOONS. A natural for beginners or grown ups 25c brings this amazing device with complete instructions and over 100 sketches.

Ed Gullen Cartoonist TOLL GATE HILL NEWTOWN, CONN.

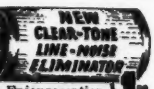
$10.95

Delivered in U. S. A.

HEAT THAT COLD ROOM

Don't shiver in a cold room. You can install this booster fan in warm air furnace pipe yourself, and get forced circulation. Patented cooling feature prevents motor failure common to unventilated fans. Fits pipe sizes from 8" to 12", runs on house current. If your furnace dealer cannot supply you, write for free circular or send check to McLarty Systems, Dickman Highway, Battle Creek, Mich.

Reduce RADIO NOISES



SIMPLY PLUG Radio or Appliance cord into Noise Eliminator and plug into wall socket. Enjoy reception FREE from many distracting noises. Send No Money, pay postman $1 each (2 for $1.75) plus postage or send cash and we'll mail postpaid. Try 5 days, money back if not delighted. Many hundreds of satisfied users. Send for yours today. **$1.00 EA 2 for $1.75**

RAND SALES, Dept. K
688 LEE STREET DES PLAINES, ILLINOIS

NO MORE **RUNNING TOILET!**

New scientific achievement, pat. rubber cushion rim adjusts to fit all valve seats perfectly. Stops flush instantly, ends leak noise. Cuts water bills. Self centering, self aligning. Brass rod incl. cost no more. 5 yr. GUARANTEE. Send $1 cash, check, or money order and we ship prepaid. Sorry, no C.O.D. Satisfaction or money refund within 5 days.

METROPOLITAN ELECTRONICS CO.
Dept. 204, 106 Fifth Ave., New York 11, N.Y.

HIGH INCOME TRAVEL ABROAD

LEARN EXPORT

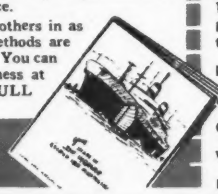
NEW QUICK WAY

Tired of humdrum, low-paid, overcrowded vocations? U. S. A. Export-Import volume was over $19 Billion during the year ending last July. Compare the few listings of World Traders in your phone book against the hundreds in struggle-to-live lines. Men and women have room to prosper and opportunities to travel abroad in World Trade.

EXPORT MANAGERS MAKE UP TO $12,000 A YEAR ...and even more. But the sky's the limit in your own business. Commissions of $10,000 to $20,000 or more a year are possible. Customers in other lands tell you what they want. You buy FOR them—ship at their expense at handsome profits. Big profits in Imports too.

PAST EXPERIENCE UNIMPORTANT. No previous experience or special education is necessary when you learn by simple methods based on my 25 years' practical experience.

I TEACH YOU AT HOME. I have trained others in as little time as one month because my methods are direct, free of non-essentials and red tape. You can start your own mail order Export business at home on practically no investment — FULL OR SPARE TIME!



Write for FREE BOOK

PRACTICAL—NO THEORY. Twenty clear, fascinating lessons, full year's consultation service included, also full year membership in International Traders' Guild which puts you in contact with traders the World over. WORLD TRADE CERTIFICATE AWARDED. Money-Back Agreement.

START TODAY—GET FREE BOOK!

Rush coupon today for illustrated FREE book. No obligation. No salesman will call. Airmail reaches us overnight.

B. L. Mellinger, Director, The Mellinger Co.
1422-JC Westwood Blvd., Los Angeles 24, Calif.

MAIL COUPON NOW

B. L. Mellinger, Director, The Mellinger Co.
1422-JC Westwood Blvd., Los Angeles 24, Calif.
Please send FREE BOOK showing how I may enter the profitable career of World Trade.

Name _____

Address _____

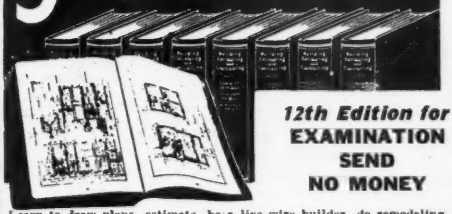
City _____ State _____

Veteran? _____ Occupation? _____ Age? _____

Location preferred? _____

It's worth your while to check the classified bargains ➔ on page 48

9 BIG BUILDING BOOKS



***12th Edition for* EXAMINATION SEND NO MONEY**

Learn to draw plans, estimate, be a live-wire builder, do remodeling, take contracting jobs. These 9 practical, profusely illustrated books cover subjects that will help you to get more work and make more money. Masonry, concrete forms, carpentry, steel square, roof framing, construction, plumbing, heating, painting, decorating and many other subjects. More than 4000 pages—2750 illustrations.

BETTER JOBS—BETTER PAY

A nationwide building boom is in full swing and trained men are needed. Big opportunities are always for MEN WHO KNOW HOW. These books supply quick, easily understood training and handy, permanent reference information that helps solve building problems.

UP-TO-DATE EDITION

These books are the most up-to-date and complete we have ever published on these many subjects.

Coupon Brings Nine Big Books For Examination

AMERICAN TECHNICAL SOCIETY—Publishers since 1898
Dept. G8320 Drexel at 58th Street Chicago 37, Ill.

You may ship me the Up-to-Date edition of your nine big books, "Building, Estimating and Contracting" without any obligation to buy. I will pay the delivery charges only, and if fully satisfied in ten days, I will send you $2.00 and after that only $3.00 a month, until the total price of only $34.80 is paid. I am not obligated in any way unless I keep the books.

Name _____

Address _____

City _____ State _____

Please attach a letter stating your age, occupation, employer's name and address, and name and address of at least one business man as a reference. Men in service, also please give home address.

PEARL

FINISHING OFFERS YOU

BIG MONEY

RIGHT AT HOME

AMAZING NEW PEARL FINISH can be instantly applied to any article—leather—wood—plastic—glass—metal, etc.

BABY SHOES preserved for life in beautiful Baby Pink, Blue, and Ivory thrill mothers and bring immediate sales.

Nothing else like it! Costume jewelry, buttons, earrings, treasured mementos, etc., etc., take on new splendor and beauty at once.

TREMENDOUS DEMAND—Help us fill it—Fantastic profits await those who act NOW. Be First! Scoop the market. Never before has such an opportunity been offered. Never before such Big Profits made so quickly.

DON'T PASS THIS UP—It costs Absolutely Nothing to get the **FREE FACTS** that show you the **EASY WAY** to **QUICK, BIG MONEY** overnight. Mail Coupon TODAY!

PEARL-KOTE CO., Dept. 11
2111 W. Manchester Ave., Los Angeles 47, Calif.
Okay! RUSH me FREE FACTS at once.

Name _____

Address _____

City _____ Zone _____ State _____

WHOLESALE USED TIRES DIRECT TO YOU WITH LIFETIME TIRE GUARANTEE

(10% discount on 2 or more tires if you send this ad with order)

TUBE DELIVERED WITH TIRE AT NO EXTRA COST FOR 15" & 16" PASSENGER TIRES

Safe—Our tires used on school buses and ambulances

EXCEPTIONALLY GOOD TREAD—NO RECAPS

600-16 . . 6 ply Military—Mud and Snow Tire.....$6.37

550-16	$5.19	525-18	$ 6.69	700-15	$ 5.29
600-16	5.29	550-17	7.99	600-20	9.75
650-16	5.29	650-15	4.98	650-20	9.75
700-16	6.29	825-20	15.98	700-20	10.98
550-15	4.81	900-20	15.98	32-6 (8)	10.49
		1000-20	16.89		

ALL GOOD TIRES

550-16	$3.54	30-5	$ 7.98	1200-20	$18.78
600-16	3.59	650-20	7.69	750-24 (36-6)	12.21
650-16	3.89	700-20 (8)	9.29	38-7 (825-24)	13.75
700-16	4.59	700-20 (10)	12.48	1000-22	17.70
550-15	3.79	750-20 (8)	8.19	1100-22	16.89
650-15	3.89	750-20 (10)	9.19	900-24 (40-8)	21.60
700-15	3.98	825-20	11.19	900-16	8.98
550-17	5.69	900-20	11.89	825-15 (14 ply)	14.10
750-16	8.40	1000-20	12.89	750-15 (12 ply)	11.30
600-20	7.98	1100-20	13.89		

GOLD BOND SPECIAL—750-20 MILITARY TIRES

Will fit 650 x 20 700 x 20 (8 & 10 ply) 34 x 7 (8 & 10 ply)

Special	$10.49	900 x 16 Special	$ 9.03
Superior Quality	12.98	900 x 16 extra	11.19
Gold Bond Finest	14.98		

Send check or money order with this ad

GOLD BOND TIRE CO., Dept. MI 24
512 NORTH 1ST ST., RICHMOND, VA.
"A gold bond written guarantee with every tire"

$100.00 A DAY

Yes! $100.00 a day!

Sensational "walk-in, walk-out" 10-second demonstration makes possible 30 to 50 calls a day. Sell 1 out of 3 for a daily profit of $100 or more.

Spectacular Invention

You write on glass in 5 colors with "Magic Crayon." Then watch letters "catch fire" and burn like brilliant Neon! Merchants amazed...snatch crayon out of your hand... start writing themselves! NOTHING BEFORE LIKE *LITEWRITER* PROFITS ever thrilled salesmen.

Rush Coupon for FREE Offer on the most Breath-taking Money Maker of the Day!

Salesmen, Distributors, Crew Managers try out Litewriter for one day — then drop everything for this astounding money-maker. It's **patented** — hence **exclusive** with Maxilume men. No competition. Quick sales come easy. Many merchants buy three or four. Many salesmen close 1 out of 3 demonstrations. **Don't waste time.** Wire, phone or airmail name for facts. ALL FREE. If you have crew, ask for Exclusive Territory information. This is the biggest thing of the year. Don't miss it!

L. B. Patterson, MAXILUME CO., Dept. L-1011
125 W. Hubbard St., Chicago 10, Illinois

Rush complete information on Litewriter, Free Selling Kit, Free offer of Demonstrator and instructions for making "walk-in, walk-out" demonstration. No charge now or at any other time.

Name.....

Address.....

City.....*Zone*.....*State*.....

---

6 POWER PRISM BINOCULARS

VEST POCKET IN SIZE

COATED LENSES! Dynamic in power and range. At 1,100 yards has sharp, clear field of 370 feet! Made to **military specifications.** Moisture-proofed—Dust proofed! All metal construction. Individual eye focussing. Adjustable for all eye widths! A compact, durable, all-purpose, **achromatic prism binocular.** NOT a field glass. Economy priced at fraction of what similar glasses sell at retail! Complete with quality leather, plush-lined case and straps only $19.95 plus 20% Federal tax. Cash orders sent postpaid. On C.O.D.'s include $2.00 deposit. **GUARANTEED.** Try for 20 days at our risk and expense. UNITED PRODUCTS CO., 7941 S. Halsted, Dept. ARF-414, Chicago 20. Reference Dun & Bradstreet.

TALK—SING—PLAY

OVER YOUR RADIO with REAL RADIO MIKE! Attaches in a jiffy—FULL INSTRUCTIONS GIVEN! SWELL FOR "PARTIES"—"CUT IN" ON OR "KID" REGULAR NETWORK PROGRAMS or put on YOUR OWN BROADCASTS! AMAZE YOUR FRIENDS—REAL FUN. Beautiful Metallic 6" high.

12 RADIO BROADCASTING LESSONS GIVEN with each mike.

SEND NO MONEY Just pay postman $2.99 C.O.D. plus postage or send $2.99 and we pay postage! RADIO MIKE is available ONLY from us by mail—GUARANTEED.

MIDWAY CO. DEPT. MMI-11 KEARNEY, NEBR.

TRAIN

Your VOICE!

Results GUARANTEED

Strengthen your voice this tested, scientific way. Yes—you can now build yourself a powerful speaking or singing voice in the privacy of your own room. Self-training; no music or piano required. Just send name for sensational details and FREE vocal mechanism chart. State age.

Perfect Voice Institute, Studio L-3, 1141 S. Wabash Ave., Chicago 5, Ill.

FLOOD LIGHT

Weather-proof

With 150 Watt Sealed-Beam bulb and plug-in cord. (bulbs replaceable). **$4.95**

Check or M.O. with order. Add 30¢ postage.

STANDARD CRAFTS
365 9th Ave. (Dept. M) N.Y. 1, N.Y.

---

no AC-DC

ARC WELDER

A sturdy, compact, metal Arc Welding Outfit for light welding. For home workshops, mechanics, farmers, etc. Repairs toys, fenders and other steel items 16 to 22 gauge. Everything you need—Welder, Helmet, Rods, Attachments, Instructions. Only $5.95 postpaid, or C.O.D. plus few cents postage. Ten-day Trial Offer. Money back guarantee if not satisfied.

$5.95 Complete

MINEX MFG. CO., 1911 Debolt St., Newtown, Ohio

LOTS $300 LOW TERMS

In California's loveliest Garden Spot, on scenic shores of beautiful Morro Bay. Enjoy future independence with excellent soil, soft water, wonderful fishing, hunting, boating, bathing, etc. Grow fruits, vegetables, poultry. Perfect temperate climate. Congenial community. Finest investment. Free literature.

RICHARD S. OTTO
Dept. T **San Luis Obispo, California**

SENSATIONAL BARGAIN!

WORK SHIRTS

EMBROIDERED **NAME FREE** of added cost! With each Order Over $1.00

69c 3 FOR $1.79

What a buy! These are **SURPLUS STOCK FROM MID-WEST SUPPLY FIRM!** Sturdy, serviceable work shirts, though used, have been washed, sterilized and put in perfect condition. Every shirt is cut from durable wash materials in choice of **Blue, Tan, or Grey.** Well made with reinforced stitching at strain points. Order today at our risk! **MONEY-BACK GUARANTEE!**

SEND NO MONEY!

Just send name, address, neck size and color choice. Pay postman plus postage or send cash and we pay postage. **Inspect for 10 days.** If not delighted return for full refund!

YOUNG DISTRIBUTING CO.
Dept. 211 3325 Puritan
Detroit 21, Michigan

WORK PANTS
to match shirt.....99c
Send waist measure and leg length
SHIRTS & PANTS TOGETHER $1.49
Send shirt neck size, waist and leg length
COVERALLS
Send chest measure..$1.49
SHOP COATS
Send chest measure..$1.49

WHAM-O SPORTSMAN*

$1.00 postpaid

Dealers Write

HITS LIKE A.22 RIFLE—
KILLS RABBITS, SQUIRRELS.
For Hunting, Target, Hunting Pests.

A man's sport!
Powerful, silent, accurate.
Complete with 40 pellets and extra rubber straps. Send $1.00 today to—
Wham-O Mfg. Co., Box 6K, South Pasadena, Calif.

HEAVY DUTY STOCK

*PROFESSIONAL MODEL USED BY MEMBERS OF NAT'L SLINGSHOT ASSO.

LEARN MEAT CUTTING
At Home—In Spare Time

Get into the vital meat industry. Concise, practical Home Training based on 25 years proven instruction methods used at National's famous resident school. Prepares you for bigger pay as Meat Cutter, Supervisor, market manager or more money in your own store. Go as rapidly as your spare time permits. Diploma. Start NOW to turn your spare hours into money. Send for FREE bulletin today. No obligation.

National School of Meat Cutting, Inc. Div. ME-65 Toledo 4, Ohio

STUDY AT HOME

WITH AN EDUCATIONAL INSTITUTION

Courses in ENGINEERING: Electrical; Civil; Mechanical; Drafting; Architectural; Automotive; Steam; Diesel; Aeronautical; Radio; Structural; Mining; Industrial; Petroleum; Marine; Refrigeration; Air Conditioning; Chemical.

Courses in ARTS AND SCIENCES: Philosophy; Education; Letters; Psychology; Public Health; Medical Jurisprudence; Sociology; Physics; Chemistry; Geology; Pol. Science; Theology; Law; Business and Commerce; Accounting; Mathematics; Statistics; Agriculture.

McKinley-Roosevelt Incorporated, 4610-CC, Sheridan Rd., Chicago 40, Illinois

IS YOUR JOB

DEPRESSION-PROOF?

Can you lose employment because of depression, business failure or old age? Learn watchmaking, the mechanical profession called "depression-proof for trained men" by impartial national authorities. Old age brings increased respect instead of insecurity.

Study veteran training approved courses in watch and clock repair, jewelry engraving, chronograph repair at the world's largest, best-equipped watchmaking school.

SEND FOR FREE 116-PAGE INFORMATION PACKET

WESTERN PENNSYLVANIA HOROLOGICAL INSTITUTE
WORLD'S LARGEST WATCHMAKING SCHOOL

DESK 25, 808 RIDGE AVE., PITTSBURGH, PA.

ARE YOU *NATURALLY* INVENTIVE?

"Cash In" On Your Natural Talent By Learning WHAT To Invent—

2100 Inventions Needed Now!

TURN your talents into CASH! Invent the *simple* things that people need and want!

The Kiddie Kar brought its inventor a cool MILLION dollars. A 70-year-old grandmother made $350,000 on an overall buckle. Others became independently wealthy by "dreaming up" the rubber pencil tip, the ordinary paper clip, the hairpin, etc. YOU can cash in, too—if you concentrate your talent on the inventions that are really NEEDED!

The EASY Way to Get Started

$250,000

$135,000

Don't waste time and brain-work on something nobody wants! Find out WHAT to invent. A valuable book by Raymond F. Yates, noted science editor and inventor, lists and describes over 2100 PRACTICAL, money-making ideas that are crying aloud to be invented!

These 2100 ideas are the things *most needed* and *surest to make money.* They are listed under 34 different headings for quick reference: Electrical, Radio, Automotive, Agricultural, Building, Household, Clothing, Toys, Time-Savers, etc.

This book ALSO tells how to think inventively; how to PROTECT your ideas; how to develop an invention STEP-BY-STEP, etc.

$100,000

$1,000,000

SEND NO MONEY

FREE 5-DAY EXAMINATION

Would YOU like a slice of the $280,000,000 that American inventors get *each year* in royalties? Get started *now*! Just mail the coupon and get "2100 Needed Inventions," by Raymond F. Yates, for 5 days' FREE trial. If, even in that short time, you are not convinced this book can help you make money—just return it and owe nothing. Otherwise, send only $2.50, plus few cents postage, as payment in full.

Any one of the 2100 ideas in this book can bring *somebody* a fortune. Maybe it can be YOU! Mail the coupon and get this book on FREE TRIAL *at once*! **Wilfred Funk, Inc., Dept. T1511, 227 East 44th Street, New York 17, N. Y.**

WILFRED FUNK, Inc., Publishers, Dept. T1511,
227 East 44th Street, New York 17, N. Y.

Please send me 2100 NEEDED INVENTIONS for FREE EXAMINATION. If I keep the book I will send you $2.50 plus few cents actual postage. Otherwise I will return it within 5 days, without further obligation.

Name .....

Address .....

City..... Zone No. (if any).... State.....

☐ Check here if enclosing $2.50 WITH this coupon, and we will pay all postage charges. Same 5-day return privilege, for full refund, applies. (Canadian Orders—25c extra for carrying charges. Only U. S. currency accepted.)

5 YEAR WRITTEN GUARANTEE
17 JEWEL CHRONOGRAPH
2 PUSH BUTTON

ORIGINALLY $71.50

WAR Surplus
- Wristwatch
- Stopwatch
- Telemeter
- Tachometer

Our Price Now Only $21.95 Plus $2.20 Tax

Precision 4 in 1 Timepiece. Incablock shock resistant feature. Sweep second hand. Anti-magnetic. Radium Dial. Stainless steel back. Unbreakable crystal. Perfect for physicians, scientists, technicians, engineers, aviators, photographers, broadcasters, navigators, sportsmen, servicemen, etc. Thousands sold at $71.50. Order now while they last at this record breaking low price.

5 YEAR WRITTEN GUARANTEE
17-JEWEL WRIST WATCH $16.95 PLUS 11% TAX

ORIGINAL PRICE $59
INCABLOC-SHOCK PROTECTED
WATER REPELLENT
Sacrificed Because
They're POST-War Surplus

Luminous dial . . . sweep second hand . . . Super Accurate . . . Imported Swiss precision movement and case. You get these Men's New 5 Year Guaranteed Watches now for a small fraction of the original price. Don't delay! Order now . . . while they last.
Send only $1 down payment with order. Pay balance to postman on arrival plus postage. Or we pay postage if you include full payment plus tax with your order. Air Mail Xmas delivery guar.
FREE! Handsome Expansion Band Included.
Money back in 5 days if not delighted. ORDER NOW!
MARYLAND DISTRIBUTORS, Dept. 124
501 E. Baltimore St. Baltimore 2, Md.

THERE'S GOLD in GOOD IDEAS!

• Rochester, New York, with its nationally known industries and progressive business community, is constantly seeking new ideas which can be converted into profitable products or enterprises. If you have something worth talking about,—something for which there is a market at a minimum price,—then write for details to Division of Public Relations, Rochester Department of Commerce, 54 Court St., Rochester 4, N. Y.

IN ROCHESTER, GOVERNMENT HELPS BUSINESS

Need a Chimney?

You Yourself Can install it . . .
The VAN-PACKER Packaged Chimney

Write for Free Booklet

SAFER Underwriters accepted, any fuel. Meets FHA requirements. ECONOMICAL save 50% over brick. ENTIRE CHIMNEY SHIPPED COMPLETE (convenient 2 ft. sections: base, housing, roof flashing, chimney cap). Nothing else to buy. PERMANENT . . . a lifetime chimney. MORE DRAFT . . . less soot, better heat.
Van-Packer Corp., 149 South La Salle Street, Chicago 3

VETS—TAKE 10%

NOT RECAPS

FREE TUBE YOU SEE OUR MONTHLY AVERAGE SLIGHTLY WORN TIRES HIGH ORIGINAL TREAD OUR GOLDEN RULE 18 MONTHS GUAR

THE WORLD'S BEST!

600x16	13.00
650x16	15.00
700x15	15.00
700x17	15.00
750x17	15.00
825x18	15.00
900x20	15.00
1000x20	15.00
32x6 (8)	15.00
34x7	15.00
825x20	15.00
1000x20	15.00

Send this ad.

750-20 Military
Fits 700-20 32x6 $10.95

BLATT
BLATT BUILDING
4528 Lancaster Ave.
Philadelphia, Pa. Dept. 8
Send Ck. or Money Order

MEN'S WRIST WATCH

Ideal Xmas Gift ONLY $5.95

. . . with gleaming, stainless steel Expansion Band. Amazing Value—1 year guarantee. Jeweled, smart chrome case, radium dial-hands; sweep second hand; shock-resistant. Wear with pride or give as a gift. Send $5.95, plus 10% Federal Tax., postpaid. Or order C.O.D. plus postage. Satisfaction guaranteed.

Leather or stainless steel expansion free of extra cost

FREE Extra BAND

MUDIAL WATCH HOUSE 330 South Wells Street Dept. U, Chicago 6, Ill.

BE YOUR OWN BOSS

Act Now! Get in on the ground floor earning money in the new amazing field of flocking (suede finish). We don't sell a course. We give you a complete kit of seven items which is all the tools and materials needed to get the experience and to do enough jobs to make a profit on your initial investment which is only $7.95, postpaid. Full refund if not satisfied. Free sample of flock finish and literature on request.

DONJER PRODUCTS CO.
1115 STERLING PLACE BROOKLYN 13F, N. Y.

80 POWER MICROSCOPE
Tremendous Value!

All metal PRECISION instrument with 80X magnification. Fully ground and highly polished lenses. Special sensitive adjustment to insure clearest and finest enlargement details. Comes complete with viewing mirror, clamps and slide. Beautifully packaged in wooden chest. ONLY $5.95. Worth many times our LOW LOW PRICE. Order from

MARDO SALES CO.
480 Lexington Ave., Dept. MK-2, New York, N. Y.

WALKIE TALKIES

ELECTRONIC
Two Way Communication
- 2 complete units
- Guaranteed to work
- Absolutely complete—ready to use
- Nothing extra to buy
- Foolproof
- Ideal for: outdoors, indoors, anywhere

TELEVISION MEN ATTENTION:
Ideal for Television Installations
Complete two way Communication System C.O.D.'s, send $1.00 deposit, pay postman balance plus postage. $2.95 post paid

NORTH EAST SALES CO.
314 Market St., Dept. MI-J, Newark, 5, N. J.

Sensational New Electric ① WELDER ② CUTTER!

FOR 110-115 AC or DC • WELD—BRAZE—CUT—SOLDER—HEAT TREAT
INSTRUCTIONS INCLUDED • LOWEST PRICE IN HISTORY!

BOTH only $12

The **WELDRITE** Combination—tested and proved by countless commercial and amateur users, is now offered direct to you at the amazingly low price of only **$12.00**. No Gas—No Gauges—No Spark Lighter needed. Always ready for immediate use—Just plug **WELDRITE** into 110-115 AC or DC outlet. Uses standard welding and brazing materials. **WELDRITE** furnished complete with Converter Unit. #1 Single Holder for welding metal to 3/16" thickness, using up to 3/32" rod, and #2 Double Holder with Copper Coated Carbon Electrodes for Brazing, Cutting, Heat Treating, etc. Starting welding materials and instructions included. Ideal for home workshop. Invaluable for garages, repair shops, farms, etc.

SEND NO MONEY! 10 DAY TRIAL. Order your **WELDRITE Electric WELDER-BRAZER-CUTTER C.O.D.** today. Pay postman **$12** plus postage charges (wt. 4 lbs.) or send **$12** and we pay postage. Either way, if not satisfied, return **WELDRITE** in 10 days for refund, less postage charges. **WELDER HOOD**—Approved Arc Welding lens—only **$3.95**. Calif. orders add 2½% tax.

FREE!
Illustrated Folder

CALIFORNIA TECHNICAL PRODUCTS CO.
448 So. Hill • Los Angeles 13, Dept. C-11

TINY RADIO Really Works!

FITS IN YOUR HAND! Works on new "PERMA-CRYSTAL" so it NEVER NEEDS TROUBLESOME TUBES, BATTERIES OR ELECTRIC "PLUG-INS"! Easy to use—Plays for nothing—Should last for years. Beautiful Red Plastic Case.

GUARANTEED TO WORK

on local programs by following instructions. G. B. of Ala., says "TINY RADIO IS JUST WONDERFUL!"

Send Only $1.00 (bill, ck, mo) and pay postman $2.99 COD plus postage or send $3.99 for postpaid delivery. **SENT COMPLETE READY TO PLAY** on simple attachment. Has personal phone. **WONDERFUL GIFTS FOR BOYS & GIRLS.** Low priced. Order **YOUR** Tiny Radio Now!

MIDWAY CO. Dept. TMI-11 Kearney, Nebr.

Learn Profitable Profession in 90 days at Home

MEN AND WOMEN, 18 TO 50

Many Swedish Massage graduates make big money. Large full time incomes from doctors, hospitals, sanatoriums, clubs or private practice. Others make good money in spare time. Prepare for future security by training at home and qualifying for Diploma. Anatomy Charts and 32-page Illustrated Book FREE—Now!

THE COLLEGE OF SWEDISH MASSAGE
Dept. 958P, 41 E. Pearson, Chicago 11, Ill.

BULLETIP
(Reg U.S. Pat. Off.) by SANDEE Exclusively

2½" diam. $1.95
3" diam. $2.95
Heavy Western Chrome Plate

SANDEE MUFFLER CO., 5643 Corryne Place, Culver City, Calif.

Train for one of these Big Fields in the Largest & Best Equipped School of its Kind

HAT CLEANING AND BLOCKING

Learn by doing in modern training shops under experts. Fine opportunities for good jobs or your own successful business. Have the advantage of going to a big, well established school. COMPLETE HAT CLEANING AND BLOCKING TRAINING IN ONLY 12 WEEKS.

Shoe Repairing

Look to the future with confidence. Get into these great fields which are among mankind's oldest and most essential. Trained men needed in practically every locality, the year around. No previous experience or advanced education necessary.

G. I. APPROVED

Write for Free Booklet Today

CHICAGO SCHOOL OF SHOE REBUILDING
124 E. 26th Street Dpt. MI-11 Chicago 16, Illinois

MORE PAY *through* HOME STUDY TRAINING *in* SPARE TIME

Do you want a better position—a larger salary? They are within your reach—now. LaSalle experts will guide you step by step in gaining business training which leads to greater earnings.

The time-saving, interesting LaSalle Problem Method helps you prepare at home, without interference with your present duties.

Simply mark on the coupon the field in which you desire success, and we will mail you a valuable book describing the opportunities in that field—plus "Ten Years' Promotion in One"—a book which has helped many men. Let us tell you how we have started thousands of average men and women on the high road to success and more money. Check and mail the coupon now.

LASALLE EXTENSION UNIVERSITY
A Correspondence Institution
417 S. Dearborn St., Dpt. 11493-R, Chicago 5, Ill.

Send me full information regarding the course I have marked—without obligation—plus "Ten Years' Promotion in One."

- ☐ Higher Accountancy
- ☐ C.P.A. Coaching
- ☐ Bookkeeping
- ☐ Law: LL.B. Degree
- ☐ Business Management
- ☐ Salesmanship
- ☐ Traffic Management
- ☐ Foremanship
- ☐ Industr'l Management
- ☐ Stenotypy (Machine Shorthand)

Name.....*Age*.....
Address.....
City.....*Zone*.....*State*.....

FAST PUSH-BUTTON POWER CAR!

ALL ELECTRIC REMOTE CONTROL 1951 AUTO SENSATION!

- Driven By Powerful Remote Control
- Powered with Electric Mini-Motor
- Latest All Electric Marvel
- Balloon-type Rubber Tires

Imagine only $3.49 COMPLETE!

PUSH THE BUTTON! IT STARTS! REVERSES! STOPS! STEERS!

The greatest new electrical toy since the electric trains. **REMOTE CAR** is a thrillingly realistic scale model, made of colorful shining plastic. It runs and steers by remote control—no wind-up or friction motor, but an **ALL-ELECTRIC PRECISION-MADE MOTOR**, powered by 2 long lasting flashlight batteries. Push the magic rheostat button, and you really make things happen. Here's real action to fascinate every child, and daddy too. **RUSH YOUR ORDER TODAY! SEND NO MONEY!** Remit with order and we pay post. or C.O.D. plus post.

NOVELTY MART 19 East 8th Street, Dept. 353, New York 3, N.Y.

WE CAN TEACH YOU TO MOUNT BIRDS

Send For Free Book Now!

FUN - FASCINATION - PROFIT

Be a Taxidermist. New Profitable business. Learn quickly at home, to **MOUNT** life-like **Birds, Animals, Game-Heads, Fish.** Save your valuable trophies. Decorate your home and den. Learn genuine **Chrome Tanning** for harness and sole leather, buckskin and fine furs. Mount **Common** specimens, squirrels, rabbits, owls, even frogs, into marvelous craft-work groups, both useful and humorous. **Wild-game not necessary. Send Today for Free Book!**

BIG PROFITS Turn your spare time to cash. Have a side-line profitable business. Mount game trophies for sportsmen; sell your own mounts; save money and **Make Money** with expert tanning. Learn by mail from old reliable school, with 400,000 graduates. **Investigate Today.**

FREE BOOK 48 pages, very interesting. 100 beautiful GAME PICTURES. Tells how YOU can become a taxidermist. Absolutely FREE if you send at **once.** Write for YOUR copy TODAY—THIS MINUTE. State your AGE.

N. W. School of Taxidermy, 2411 **Elwood Bldg., Omaha, Neb.**

THE PERFECT GIFT FOR FATHER AND SON . . .

SAVE UP TO 50% THE WORLD'S Greatest VALUES in BINOCULARS

GERMAN TYPE, BRAND NEW, DELUXE LEATHER CASE, INCLUDED. Built to rigid military specifications. Never before at these prices! Free Catalog.

Fully Guaranteed		OFFER IS LIMITED
6 x 15	$18.00	with Coated Optics $19.50
6 x 30	37.00	with Coated Optics 39.50
7 x 50	42.50	with Coated Optics 49.50
10 x 50	52.00	with Coated Optics 62.00

Many other models. Largest Stock in the West. ORDER TODAY! Send check or money order. $2.00 Deposit on COD's. MONEY-BACK GUARANTEE!

"HOW TO SELECT BINOCULARS" Add 20% Fed. Tax. Postage Included

BUSHNELL IMPORTERS Dept. 83 43 E. Green, Pasadena 1, Cal.

POKET-MITE PORTABLE

Tiny enough to slip into jacket pocket and features miniature hearing-aid tubes, walkie-talkie type antenna and newly developed, long-life, hearing-aid battery. All parts contained within beautiful plastic case. Strong reception within 50 miles radius, and long-distance of over 1000 miles a plug-in auxiliary antenna is provided.

SEND ONLY $1.00

Pay postman only $5.99 plus C.O.D. or send only $6.99 for postpaid delivery. Complete set of finished midget parts includes tubes, beginners picture diagram and simple instructions. Ready to wire as shown.

(Foreign orders $8.00 U. S. Cash)

DURA-MITE PRODUCTS, GREENVILLE, N. CAROLINA

EARN $5 an HOUR—ON THE SIDE

WHILE LEARNING WATCH & CLOCK REPAIRING AT HOME

WITH 19 ITEM MASTERCRAFT SELF-TRAINING KIT

No age or physical limitations in this profitable and uncrowded field. Kit contains: **AMERICAN JEWELED WATCH MOVEMENT,** invaluable for practicing—**PROFESSIONAL TOOLS:** Combination Tool; Loupe; 6 Watch Screw Drivers; Clock Screw Driver; Tweezers; Clock Tweezers; Material Tray; Case Opener & Knife; Movement Gauge; Oil Cup; Watch Oil; Clock Oil; plus **COMPLETE ILLUSTRATED COURSE IN MODERN WATCH & CLOCK REPAIRING** teaching how to locate troubles, repair, clean, adjust, and explaining the use of all tools and materials. **$19.95** Post Paid (C.O.D. Plus Charges) Money Back Guarantee. Only All-inclusive instructive Tool Catalog with about 800 illustrations & descriptions FREE with KIT or send $.50 credited to 1st order.

MODERN TECHNICAL SUPPLY CO.

Dept. 11-MI 55 West 42nd Street New York 18, N. Y.

PRINT YOUR OWN POST CARDS

COMPLETE OUTFIT *only* **$7.50**

Amazing results in sales, inquiries and contacts . . . saves time and money . . . very easy to use GEM STENCIL DUPLICATOR is ideal for *Advertising, Announcements, Notices, Labels, Forms, Price Lists*—hundreds of uses for every type of business and organization. Comes complete with all supplies, instructions and 60-page Book of Ideas.

FREE TRIAL OFFER: Try it before you buy it! Write and a GEM OUTFIT will be sent you postpaid. After 10 days, send only **$7.50** or return the GEM, no questions asked. The GEM must sell itself; you be the judge.

BOND EQUIPMENT CO. • Dept. 119
6633 ENRIGHT ST. LOUIS 5. MO.

SEND NO MONEY • FREE TRIAL OFFER

SHOE REPAIR OFFERS BIG INCOME

LEARN IN 12 WEEKS TIME

You can own your own shop or earn big income as skilled shoe repairman. Growing demand everywhere at top wages for men who know how. We teach you quickly by actually working on shoes and modern machines. School open to all from 18 to 60 years of age. **Free Big 20 Page Book** explains everything. Send for your copy today. Los Angeles & Chicago Schools only approved for Vets.

MODERN SHOE REBUILDING SCHOOL, Dept. MI
Established 1927

2937 Belmont Ave., Chicago 361—12th St., Oakland, Calif.
806 S. Figueroa St., Los Angeles 14, Calif.

MONEY for MEN ALL DATA FREE

THE PLASTEX Industry needs manufacturers on small scale and for big production of Lamp and Clock, Stands, Art Goods and Novelties in Plastex and Marble imitation. Experience unnecessary. 1½c material makes regular 10c store sellers. Rubber molds furnished for speed production. Small investment brings good returns. Big chain store orders now being placed. Ambitious men have chance for real prosperity. Our free booklet will interest and benefit you.

PLASTEX INDUSTRIES, DEPT. 3
3400 THIRD AVE., NEW YORK 56, N. Y.

HELP STOP CRIME!—LIVE A LIFE OF THRILLS AS YOUR OWN BOSS

Be a DETECTIVE

Learn At Home In Your Spare Time

Earn good money in this respected profession. An established School with modern ideas. Hundreds Profited by our Easy to Learn Methods. Course written by former United States GOVERNMENT AGENT and U. S. Naval INTELLIGENCE OFFICER, includes EXPOSE and amazing disclosures of actual operation of many types of criminal. Basic fundamentals in detection and prevention. Shadowing simplified. Details in Book.

INTERNATIONAL DETECTIVE SYSTEM

FREE BOOK Mail Coupon

International Detective Training School
1701 Monroe Street, N. E., Dept. 2511
Washington, D. C.

Name .....

Street ..... Age .....

City ..... Zone ..... State .....

500 Pages, 7000 Novelties

10¢

Send 10c for mammoth, amazing catalog of 7000 novelties. 1-inch thick, roto picture section, 6-color cover. Carnival, circus, world's fair & science exhibit rolled into one! Includes live animals & pets, scientific supplies, hobbies, funmakers, planes & boats, looms, magic tricks, joke articles, unusual seeds, gadget timesavers, cameras, optical goods, projectors, movies, lucky jewelry, religious novelties, telegraph sets, disguises, musical instruments, stamps, coins, puzzles, fortune tellers, radios, experimental sets, auto & bike accessories, Western wear, telescopes, magnifiers, compasses, banks, smokers' gadgets, artists' supplies, printing sets, engines, motors, shockers, knives, billfolds, fireworks, guns, rifles, sports, money makers, swimming helps, 1000 fascinating books, games, locks, live chameleons, rings, exercisers, curious plants, etc., etc., etc. (DeLuxe Hard Bound Library Edition 25c Postpaid.) Regular paper covered edition 10c. (Stamps accepted.) Sent Air Mail, $1.00. JOHNSON SMITH & COMPANY, Dept. 166 DETROIT 7, MICHIGAN

REAL ESTATE — BE A BROKER

PAYS BIG! SEND FOR FREE, BIG, ILLUSTRATED CATALOG NOW! No obligation. Graduates report making substantial incomes. Start and run **your own business quickly.** Men, women of all ages, learn easily. Course covers Sales, Property Management, Appraising, Loans, Mortgages, and related subjects. **STUDY AT HOME** or in our classrooms in big cities. Diplomas awarded. G.I. approved. Nationally known.

FREE BOOK TELLS HOW

WEAVER SCHOOL OF REAL ESTATE (Est. 1936)
15 E. Pershing Road Dept. IM Kansas City, Mo.

Train for BIGGER PAY in **REFRIGERATION AIR CONDITIONING**

GET FREE BOOK!

Prepare yourself for a fine paying job. Trained men find opportunities installing and servicing Refrigeration and Air Conditioning. Get practical training in spare hours at home — plus four full weeks in the great ITI shops. Job Placement Help. FREE BOOK. Write Industrial Training Institute
2130 Lawrence Avenue
Dept. C-3 Chicago 25, Ill.

Command Bigger Money!

STUDY LAW

STUDY AT HOME for Business Success and LARGER PERSONAL EARNINGS. 40 years expert instruction—over 114,000 students enrolled. LL.B. Degree awarded. All text material furnished. Easy payment plan. Send now for FREE BOOK—"Law and Executive Guidance." It explains the course—how you may enroll and the many ways you may profit from Law Study. Write TODAY to:

G. I. Approved.

AMERICAN EXTENSION SCHOOL OF LAW
Dept. 20-X, 646 N. Michigan Ave., Chicago 11, Ill.

EARN MORE IN DRAFTING

Steady Employment • More Opportunities For Promotion

"Here I am at work making good money as a draftsman. I'm glad I sent the coupon to Chicago Tech for that Free Trial Lesson and found out how easy it is to learn Drafting in spare time at home. Today I feel secure in my job because the draftsman's work comes first on any new project. And, in addition, draftsmen can't be replaced with machines. What's more, I feel I'm slated for promotion and more pay, because I see so many draftsmen advancing to high-pay jobs."

LEARN IN SPARE TIME—AT HOME!
(or at the College in Chicago)

A few hours of pleasant home study every week—that's all. No interference with your present job. All the tools you need; drawing outfit included. With Chicago Tech's help, you train yourself step by step. This tested method—developed over 45 years of C.T.C. progress—prepares men quickly for good positions in industry.

FREE INFORMATION—SEND COUPON

To prove to you how easy it is to learn Drafting at home by the Chicago Tech method, we will send you this FREE TRIAL LESSON. No charge for this lesson, now or later. Fill out and mail coupon, or send post card today.

CHICAGO TECHNICAL COLLEGE

P-273 Tech Bldg., 2000 So. Michigan Ave., Chicago 16, Illinois

Mail me FREE Lesson with information about big opportunities in DRAFTING.

Name ..... Age .....

Address .....

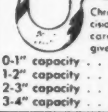
City ..... Zone .... State .....

WAR SURPLUS AND OTHER BARGAINS

FANCY BRIAR PIPES

We have been awarded 100,000 fancy briar pipes by Quartermaster Corps. Assorted shapes and sizes. All popular makes. Buy now for Christmas Gifts ..... Set of 7 **$3.50**

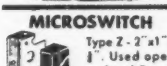
MICROMETERS



Chrome plated, precision engineered and carefully tooled to give long life. All new.

0-1" capacity . . . each **$2.25**
1-2" capacity . . . each **3.50**
2-3" capacity . . . each **5.50**
3-4" capacity . . . each **6.50**

EXPANSION REAMERS



Spiral Flute. Mfd. by Alvord Polk Tool Co. **All New,** original pack 1/4 3/8 7/16. Recommended expansion limit .006. Original value $12. Set of 3 ..... **$4.95**

MICROSWITCH

Type Z-2"x1"x 1/2". Used open or closed. For automatic contacting-light, sound, model train systems, chimes, etc. New 5 for **$2.**

Aluminum Spring Actuator to fit above Microswitch . . 5 for **$2.**

HIGH SPEED DRILL BITS

ALL NEW! Fractional and numbered. Original value $15. 30 assorted sizes and lengths **$3.50**

Send check, money order or cash. 25% Deposit required on C. O. D. orders. All prices F. O. B. Culver City, Calif.

AIRBORNE SALES CO., INC. DEPT. MI-11-2 CULVER CITY, CALIF.

CLASSIFIED SECTION

save money—order by mail

You advertisement can reach this buying audience of nearly 2 million readers for only 60c per word . . . payable in advance . . . minimum 10 words. Copy to be inserted in Jan. issue must be in the office Nov. 3rd. Mail to MECHANIX ILLUSTRATED, 67 W. 44th St., New York 18, N. Y. Word count: Zone number free. Figure one word: Name of state (New Jersey); name of city (New York); sets of characters as in key (14-D); also abbreviations as 35MM, 8x10, A.D. A.C.

ADVERTISING SERVICE & AGENCIES

ADVERTISING—COPY, Layouts, Folders, Circulars, Sales Letters Created for You. Expert, Inexpensive. Dinads, 94 Yesler, Seattle 4, Wash.

ADVERTISE IN 40 weeklies, $3.50 (24 words). M. R. Pennebaker, San Marcos, Texas.

ADVERTISE: 24 WORDS, 40 Newspapers $3.50. Lists Free. Advertising Bureau, 10511-B Springfield, Chicago 43.

24 WORDS IN 50 Weeklies, $4.96. J. Darnell, 730 Hays, Jackson, Tenn.

AGENTS WANTED

WANT PLEASANT outdoor work in a business of your own? Good profits selling over 200 widely advertised Rawleigh home/farm necessities. Pays better than most occupations. Hundreds in business 5 to 20 years or more! Products—equipment on credit. No experience needed to start—we help you. Write today for full particulars. Rawleigh's, Dept. K-145-MOM, Freeport, Ill.

AMAZING OFFER—$40 is yours for selling only 50 boxes Christmas cards. Also 50 and 25 for $1.00 with or without name. Free samples. Other boxes on approval, including entirely new, different deluxe assortment with feature television card. Cute plastic assortments. Write today. It costs nothing to try. Cheerful Card Co., 1006 White Plains, N. Y.

LOOK! MAKE money all year round selling personal initialed individualized belts, buckles, cap badges, western buckles, tie holders, name plates. 2000 emblems to choose. Big profits, whole or part time. Please write today special outfit offer. Hook-Fast Specialties, Box 1425, Dept. 4, Providence, R. I. Established 1926.

1949 CHRISTMAS CARD Catalog Now Ready! Earn More Money! Be a Wholesale Jobber! A large selection of Box Assortments, Imprint Lines, Religious, Personalized Cards and Christmas Novelties. Three sample boxes, retailing for $2.60, only $1.00 postpaid. Catalog Free! Elfko, 440 North Wells, Chicago 10.

SCHOOL SENIORS! A postal will bring you our wonder, Kwick-Sell Cardalog of popular Graduation Name Cards. Biggest profits! Only firm giving free Souvenir Chest and card case. Don't miss out. Hurry that postal! Craftcards, Box 235 (AF), Pittsburgh 30, Penna.

BIG MONEY—Fast! Sell Plastic Tablecloths (From $3.50 Doz.), Drapes, Aprons, over 300 other items. Cash advanced Daily. Lowest Factory Prices; Highest Quality Plastics! Huge Selling Kit Free! The Dur-Ever Co., 2781-K Atlantic Ave., Brooklyn 7, N. Y.

FREE NYLONS given if Kendex hosiery runs or snags. World's only women's hosiery sold with written guarantee amazing everybody. Mere words could not express unbelievable money making opportunity. Fantastic earnings become reality. Armstrong earned $202 in 9 days. Watkins sent 92 orders in one day. Imagine replacing hosiery free regardless of cause—whether use or abuse! Truly sales dynamite for terrific profits. Even if you never sold before, three magic words: "Guaranteed Against Everything" will open doors for you—make women listen and pour money in your pocket. Nationally advertised in Life, Ladies Home Journal, Saturday Evening Post, McCalls and Woman's Home Companion. Awarded Seal of Approval by Good Housekeeping. 75 million readers will see Kendex advertising to help you make quick sales and big money. Complete line from sheerest 15 denier 51 gauge to heavy 70 denier service. Sizes 8½ to 11½; lengths 28 to 35 inches; latest fashion colors plus white; full fashioned seamed and seamless. No competition because Kendex nylons are not sold in stores. Also complete line men's hosiery actually guaranteed for one full year or replaced free. Nothing like this anywhere. Includes rayon, nylon, lisle, wool, cotton, mixtures, etc. All styles, patterns, colors, prices to please everybody. 200,000 pairs constantly in stock for fast delivery. Thousands shipped daily. Over 30 years in business. You need no money or experience. Nothing to pay now or later. Just show free outfits. Write orders. We deliver and collect. Big advance cash plus huge bonus. Earn money spare or full time—exclusively or as side line. No restrictions. Become manager—appoint others to sell for you—earn steady income on their sales. Man or woman, young or old, experienced or beginner, you can make money and friends writing orders. Everything you need is furnished free, including sales books in color, samples of hosiery materials, etc. Simply write your name and address on postcard and make money next week with money-making outfits sent free and prepaid. No obligation. Kendex Company, Babylon, N. Y.

DOUBLE YOUR income selling guaranteed sportswear, shirts, jackets, nylon lingerie, hose, housedresses, nightwear. Free outfit. Jarod Manufacturing, Rockville Centre 15, N. Y.

FREE BOOK "372 Unusual Worldwide Businesses." Successful! Australia. South America. Work home (U.S.A.)! Delightful plans. Get surprise! Publishers, 8B, Carlsbad, Calif.

BIG MONEY Taking Orders: Shirts, Ties, Sox, Pants, Jackets, sweaters, shoes, uniforms, etc. Sales equipment free. Experience unnecessary. Nimrod, 4922-DO Lincoln, Chicago.

$1 STARTS YOU in business. Sell top quality $1.00 ties. Now only $7.20 dozen, your profit $4.80 dozen. Regular $1.50 up values. Send $1.00 for Introductory Offer two ties. Catalog complete line free. Philip's Neckwear, 20 West 22nd St., Dept. 416, New York 10.

BARGAINS—SAVE up to 50%. Hosiery, Lingerie, Toys, Blades, Spices, Specialties. Carded Goods, Dry Goods, Toiletries, Stationery, Jewelry, Notions, Soaps, etc. Send 10c for illustrated catalog. Reliable Jobbers, 311 N. Desplaines St., C-11, Chicago 6, Ill.

EXCELLENT SIDELINE for printing and advertising salesmen. Decalcomania name plates in small quantities. Great demand. Also, make money with our line of Automobile Initials and Sign Letters. Free Samples. "Ralco." XL-Roxbury, Boston 19, Mass.

WANTED! DIRECT from factory to customer salesmen for guaranteed shoe line. Unusual factory fitting service. $1.00-$3.00 advance commissions. Bonuses. Experience unnecessary. Free starting outfit. Mench Shoes, 9E, Brockton, Mass.

NYLON, POPLIN, Rayon Uniforms, white and colors. Immediate Delivery, Immediate Profits. Sell to Doctors, Dentists, Nurses, Waitresses, Beauticians, Housewives. Free Sales Kit. Superior Fabrics, Dept. 1-11, 3936 Market St., Phila. 4, Pa.

FREE SAMPLES. Big profits showing amazing Glow-In-The-Dark specialties. House numbers, pictures, plastic novelties, religious and nursery objects, etc. Large manufacturer. Madison Plastics, 303 Fourth Ave., New York 10, N. Y.

PHOTO—SALESMEN—Agents. Sell beautiful hand-colored plastic enlargements. Collect deposit, we deliver. Profitable sideline. Send card for free sample kit. Novel Portrait Co., 3343-B North Ave., Chicago, Ill.

SELL NEW—Used clothing from home, auto, store. Men's suits $1.25; Leather Jackets 85c; Overcoats 56c; Dresses 18c; Ladies' coats 38c. Other bargains. Catalog free. National Mail Order, 1219-U So. Jefferson, Chicago 7.

SCHOOL SENIORS—Earn 40% commission selling classmates America's most beautiful Graduation Name Cards. Largest Selection. Outsells all others. Free Sample Kit. Printcraft, Dept. 1, 1425 E. Elm St., Scranton 5, Pa.

BIG BARGAINS for big profits. Over 100 sensational values. Men's used suits $2, pants 35c, topcoats $1.25, overcoats $2, shoes 20c. Experience unnecessary. Free wholesale catalog. Superior, 1250-C, Jefferson, Chicago 7.

BUY THOUSANDS of nationally advertised products direct from manufacturers and distributors. Write for "Buy Direct and Save." Service Publishing, 215-C Investment Bldg., Pittsburgh 22, Pa.

752584

STRANGE "DRY" Window Cleaner. Sells like wild. Replaces messy rags, liquids. Simply glides over glass. Samples sent on trial. Kristee 137, Akron, Ohio.

WHERE TO Buy 500,000 articles and nationally advertised merchandise direct from manufacturers and jobbers. Sent Free, "How Direct and Make Bigger Profits." Glass Pub. Co., Ellwood City 4, Pa.

RE RENEWAL Headquarters for all magazines. Big profit in Christmas gift sales now. No experience—No capital needed. Free catalog tells how. Write: McGregor Magazine Agency, Dept. 529A, Mount Morris, Ill.

EXCELLENT SIDELINE for salesmen calling on Garages, Service Stations, Printers, Plumbers, Machine Shops. Sahara Waterless Hand Soap Co., Grand Rapids, Mich.

"FORTIFY THE FUTURE." Start own business; home, office. Booklet describing "Collection of 137 Tested Plans" free. Elite Co., 220-G Grand St., New York 13, N. Y.

SELL BIG money-maker to men and women. Easy handwork makes fast-selling useful articles. Sample free. Sunmade Company, Brockton 64, Mass.

NUSILVER PLATING Liquid. Apply with cloth. Renews Silverware. Silverplates brass, copper. Easy seller. NuSilver, 508-11MIA New York St., Aurora, Ill.

A DRESS Yours with every 3 you order for yourself and family. Amazing new bonus plan. Everything Free. Harford Frocks, Dept. A-635, Cincinnati, Ohio.

SELL POPULAR New 'Turf Publication" Wholesale—Retail—Mailorder. Modern sales methods, sample, 25c. Lakeside Publishers, Box 3755-A, Detroit 15, Mich.

NEW BATHROOM Deodorizer. Hangs on wall. Banishes odors bathroom, kitchen. Lightning seller. Samples sent on trial. Kristee 138, Akron, Ohio.

BOYS WANTED. Over $2.00 hour. Sell name plates for front doors. Free Sample. Write Dept. 84, National Engravers, 214 Summer, Boston, Mass.

HEY, SCHOOL Seniors! Want spending money? Then rush postal for simple instructions! Craftcards, Box 235 (FA), Pittsburgh 30, Penna.

WOULD YOU pay 3%—first $350 made? Book "505 Odd Successful Enterprises" free! Expect something odd! Pacific, Oceanside, Calif.

MAKE A fast dollar. Sell our plastic Christmas Tree Ornaments. Samples 50c. Matsonian, Dept. 5, North Grafton, Mass.

SELL DRUG Sundries!!! Balloons, Combs, Novelties. Razor Blades, Specialties, Carleton House Distributors, Texas City, Texas.

EARN EXTRA Cash Selling Personalized Stationery, Cards, Napkins. Particulars free. Stumpco., South Whitley 1, Ind.

DRESSES 18c; Men's Overcoats $1.00; Skirts 50c. Free Catalog. Crown, 164-ML Monroe St., New York 2.

AGENTS! 100 BRAND New Products. Confidential bulletin monthly. Publishers, Gardenville 7, New York.

WHERE TO buy 800,000 articles wholesale. Details free. Schibani, Box 1576-A, Birmingham 1, Ala.

EDUCATED? WANTED to sell students' educational specialties. 401 Reeves, Tyler, Tex.

AUTHORS' SERVICE

I WANT new writers to cash checks of $1 to $100 offered daily. The easiest way to write for pay. No previous experience necessary. FREE DETAILS. Saunders M. Cummings, 468-14 Independence Bldg., Colorado Springs, Colo.

AVIATION

AIR SHIP, employs wing-hot air bag. Can be assembled in your back yard. Carries one man. Complete parts list and price, with diagram for assembly. $2.00 to P. J. Ranch, Star Route, Rupert, Ark.

ROSS GUARANTEED questionnaires for all C.A.A. ratings. Free folder. Ross Aero Publishers, Dept. 3-M, Administration Building, Commercial Airport, Tulsa, Okla.

BUILD, FLY Bullet Raceplane. Fast, light monoplane. Blueprints $2.00. Corbcraft, 80-C Maxwell, Rochester 11, N. Y.

BLUEPRINTS, MODERN Harley powered lightplane $5.00. 1996 Frankfort, San Diego 10, Calif.

JET ENGINE $3.00; Plans $1.00; Literature 10c; M.E.W., 387 University, St. Paul, Minn.

BARGAINS

SEE OUR ad under motorscooters for Midget Car Bargains. Midget Motors Directory, Athens, Ohio.

SALESMEN WANTED

STOP! WANT to make money all year round selling a complete line, Wool and Cotton Embroidered Uniforms for summer and winter wear, Shirts, Caps, Ties, Badges, 2000 Emblems, Personal Initialed Buckles, Belts and hundreds of other easy-to-sell items. Sales kit furnished. Please write today. Hook-Fast Company, Box 480 M1. Roanoke, Va.

ADVERTISING BOOK matches—Cash in on big demand—sell Union Label matches. Cuts for all business and political parties—Free powerhouse selling kit—low prices—protection guaranteed on repeat orders—Cash commissions. Superior Match Co., Dept. F-119, 7530 Greenwood, Chicago.

SALESMEN—PUT yourself in line for big money, real future. Keep stores supplied with 5c-10c to $1 counter goods. Nationally advertised. Top profits for you and merchants. Liberal deals boost sales. Sideline or full time. World's Products, Dept. 14A, Spencer, Ind.

NEW JOBS open in selling! Send name, address for five free issues of Opportunity Magazine's money-making guide, listing hundreds of companies who'll pay you well, full or part-time. No experience needed. Opportunity, 28 E. Jackson, Dept. 19, Chicago 4, Ill.

SELL ULTRA-BLUE stock signs to stores, 1000 slogans, comedy, general, religious 7"x11"—Cost 6c—sells 35c—Make money. 15—samples ultra-blue signs 7"x11"—$1.00 Postpaid. Lowy, 8 West Broadway, Dept. 501, New York City 7.

WHY NOT Try Selling? Men have succeeded selling shoes who believed they could not sell. Free Selling Outfit puts you in secure business. Consolidated Shoe System, Dept. S-424, Chippewa Falls, Wis.

BIG MONEY Taking Orders; Shirts, ties, sox, pants, jackets, sweaters, shoes, uniforms, etc. Sales equipment Free. Experience unnecessary. Nimrod, 4922-AR Lincoln, Chicago.

UP TO $12.00 in a day and tailored suit for yourself without paying one cent. Write for plan. W. Z. Gibson, Dept. Y-484, 500 S. Throop, Chicago 7, Ill.

WRITE FOR Wholesale Deal on Slot Machines, Punchboards, Home Bars. Webb Distributing Co., 4958 W. Chicago Ave., Dept. 88, Chicago 51, Ill.

BUSINESS OPPORTUNITIES

PROFITABLE DEALER Opportunities Open. Sell lighting plants. Write for complete details. Universal Motor Company, 462 Universal Drive, Oshkosh, Wis.

COIN MACHINES earn big money! Machines at $10.50 earn as high as $5.00 weekly profit. Place machines in stores, hotels, filling stations, etc., and your income starts immediately. Routes can be operated in spare or full time with no experience needed. We'll tell you how and send you a catalog describing our nut, candy, gum and postage vendors; also pinball machines, music boxes, etc. Write immediately to Parkway Machine Corporation, Dept. 15, 623 W. North Avenue, Baltimore, Md.

MAKE MONEY spare or full time, casting Metal Toys and Novelties. Big wholesale and chain store demand for cast Metal Autos, Soldiers, Ashtrays, Banks, etc., keeps manufacturers busy. Production moulds furnished for up to 100 and more castings per hour. No experience or special place necessary. "Cash-in" on holiday orders now being placed. Write for full information and illustrations of patterns needed. Metal Cast Products Co., Dept. 2, 1696 Boston Road, New York 60, N. Y.

BIG MONEY. Spare or full time in your home. No selling! Spray New Miracle Finishes, Plush and Suede, on signs, radios, automobiles, figurines, lamps, toys, etc. Our business is booming. Help us fill huge demand. New easy Flok-Kraft methods. Material costs few pennies. You get dollars. Free samples. Complete powerful money making plan free. Write now! Coast, 1002B S. Los Angeles St., Los Angeles 15.

START YOUR Own Business On Credit. Always your own boss. 1554 Dealers, sold $5,000 to $26,500 in 1948; their average $6,742. We supply stocks, equipment on credit. 200 home necessities. Sales experience not needed to start. Wonderful opportunity to own pleasant, profitable business backed by world-wide industry. Write Rawleigh Co., Dept. K-U-MOM, Freeport, Ill.

BRUSH PLATING Outfits connect to a battery. No tanks necessary. Almost as simple as painting. Your opportunity to make good income plating, autoparts, bathroom fixtures, reflectors, mirrors. Get free proof and particulars that put you in a paying business of your own. Gunmetal Co., Ave. A, Decatur, Ill.

PEARL FINISHING — New, Amazing— Huge Profits. Start Making Big Money first day. Free Facts show easy way to $25 to $50 per day at home. Absolutely no experience. Be first—scoop the market. Write Pearl-Kote, 2111C W. Manchester, Los Angeles 47, Calif.

COLORGLAZED CONCRETE pottery made without molds. Patented method. Cemetery products, novelties, tiles. Basement leaksealing. Money-making projects. Booklet, details free. Men only. National Pottery, Grand Rapids, Minnesota.

USE YOUR Home as magazine subscription station. Represent all magazines. Liberal Commissions. Supplies furnished. Big Christmas Gift business now. Catalog, full details, free. McGregor Magazine Agency, Dept. 529B, Mount Morris, Ill.

MAKE MONEY making new greaseless doughnuts at home with electric machine. Wholesale to grocers, drug stores, cafes, hamburger shops. Send for free recipes and plans. Irving Ray Company, 3605 South 15 Ave., Minneapolis 7, Minn.

LEARN ELECTRICAL Appliance Repair. House wiring, motors, washers, cleaners, refrigerators, lamps, auto ignition, etc. Complete illustrated course. Tools furnished. Free Booklet. Pacific School, 7217 South Broadway, Los Angeles 3.

FIGURINE MOLDS for Dresden Craft, many other molds, natural liquid rubber, statuary plasters, flock finishes, etc. Illustrated catalog and "Plastercraft" manual free. Blue Rapids Supply, Box 415, Blue Rapids, Kans.

PROFITABLE SPARETIME. Easy-made attractive Christmas items. Complete manufacturing instructions, selling suggestions. Community warranty. $5.00 refundable. C-B Products, P. O. Box 164, San Diego 4, Calif.

TRADE MAGAZINES—Current copies. Business, professions, aviation, radio, refrigeration, sports, hobbies—All fields. Free price-list. Commercial Engraving Publishing Co., 34W North Ritter, Indianapolis 19, Ind.

A FACTORY in your home garage! Mfg. and sales rights, mechanics' waterless hand cleaner. $500-$800 monthly. No special equipment necessary. Formula Free. Western Aircraft Mfg., Dept. H, Los Angeles 6, Calif.

"SPECIALTY MANUFACTURING," Big money business. Start on small capital with dependable formulas. Send for Free interesting booklet. Howard Robinson, Ph. G., 1300-D South Ohio Street, Sedalia, Mo.

$3.41 PROFIT PER hour interest you? Easy, amazing process velvetizes interiors, signs, novelties, radios, lamps at low cost. Free sample. Sparks-F, 1145 Queenanne Place, Los Angeles 6.

400% PROFIT MANUFACTURING—Distributing Industrial Hand Cleaner. (Without Ammonia—Kerosene!) Sample $1. Refunded first order. Free literature! "Rythmo-D-Ex," Kingsport, Tenn.

AUTOMATIC LUBRICATOR Business. Household commercial motors. No competition. Small drillpress necessary. Free details. Eas Eway Tools, 1245 84th Street, Brooklyn 28, New York.

MAILORDER'S BEST Bets revealed! Inside information on outstanding winners—plus expert guidance toward Real success in mail selling. E. J. Lay, 3819 North Kenmore, Chicago 13.

FORGE AHEAD financially! Start Big Profit Business; Mail order or locally. Amazing invention. Free sample offer. Consolidated Equipment, 785 Guardian Bldg., Cleveland 14, Ohio.

LEARN PIANO Tuning, repairing at home. Tremendous field! Piano parts, tools furnished. Established 1935. Empire School of Piano Tuning, 606 East University Ave., Champaign, Ill.

FREE BOOK "372 Unusual Worldwide Businesses." Successful! Australia. South America. Work home (U.S.A.)! Delightful plans. Get surprise! Publishers, 8C, Carlsbad, Calif.

RAISE SYRIAN Golden Hamsters for profit. Delightful pets; Laboratories need thousands. Write today. Hoosier Hamstery, 5137 Norwaldo Ave., Indianapolis, Ind.

MAKE STRANGE plastic—1c pound. Makes attractive floors, walls, roofs built-ins. Build charming home yourself $150.00 room. Bays Laboratory, Oklahoma City 9.

RE-NU TYPEWRITER Ribbon makes letter markings bright. Sample—25c. Salesman and Dealers wanted—Big Profit. Re-Nu Company, P.O. Box 707, Tacoma, Wash.

LEARN SEWING Machine Repairing at home. Install our wholesale motor kits. Make $125 to $300 in a week. Free particulars. Taylor Service Co., Hamilton MI, Ohio.

HOW TO Set Up and Run a Mirror Shop! Resilver Mirrors. Make Chipped Glass Nameplates. Electroplating Salts and Rectifiers. John Sprinkle V33, Marion, Ind.

MONEY MAKING Mail Order Plans. Start small. Grow big. Details free. Stamp appreciated. Ad-Man Dankmeyer, 2831 Guilford, Baltimore 18, Md.

REFRIGERATION AND Air Conditioning. Complete, illustrated course. Free booklet. Mechanics School, 7217 South Broadway, Los Angeles 3.

MAIL ORDER Offers Increased Income, Independence, Unlimited Possibilities. Free Literature. Manhattan House, 126 Lexington, New York 16.

"DEPRESSION INSURANCE!" Own moneymaking business. Sample $1. Refunded first order. Information free! Pru-J-Ex, Kingsport, Tenn.

WOULD YOU pay 3%—first $350 made? Book "505 Odd Successful Enterprises" free! Work home. Expect something odd! Pacific, Oceanside, Calif.

BABY SHOE metallizing. New system assures success. Also wholesale metallizing. Details free. Treasures Forever, 89-A Henry Ave., Lynn, Mass.

FLEXIBLE MOLD compound. Perfect. Fast, special introductory offer $1.00. Sample 10c. RAD Laboratories, Dept. H, Box 605, Lynbrook, N. Y.

MAILING POSTCARDS selling repeat merchandise is profitable. Everything supplied. Details free. Gordin Publishers, Box 22, Pawtucket, R. I.

OPERATE PROFITABLE mail order business. Splendid opportunity. For details write Matthew Donjay, 125 Wakelee Ave., Ansonia, Conn.

START OWN Business—home, office; booklet describing "137 Business Plans" free. Elite Co., 220-G Grand Street, New York 13, N. Y.

100 WAYS TO use Luminous Paint. (Shines in dark). Rush name on Postal for details. Bookmart, 101 Main, Westbrook, Conn.

MAKE MONEY to live as you dream to. Send 3c stamp for proof. Hollywood Upholstery Studio, P. O. Box 1544, Oakland, Calif.

BREED EARTHWORMS Profitable. Easy for gardens, tropical fish, fine food, fishing. Wisconsin Earthworm Farm, Oshkosh, Wis.

MANUFACTURE CHRISTMAS Lycopodium. Wreath Makers Course. Samples 25c. Lycopodium Foundation, St. Paul 8, Minn.

EXTRA MONEY—No selling—operate vendors. Amazing profits, details Free. Silver King, Suite 280, 622 Diversey, Chicago 14.

SELL MERCHANDISE by Mail. A deal you will make money with. Write Home City Services, Box 1062F, Springfield, Mass.

MAKE PERFUME—Learn Profitable Business—Free—Men—Women. Write "International," 6347 Parnell-MI-11, Chicago 21, Ill.

THERE'S MONEY For You In Mailorder. Fascinating book tells how. 25c. Schladen, 124 Knox, MC30, Warren, Ohio.

MAKE MONEY at home decorating greeting cards. We supply instructions. Powell, 5713-B Euclid, Cleveland 3, Ohio.

HOSIERY, SHEETS, Print Cloths, etc. Wholesalers write for prices. Spartan Hosiery Company, Spartanburg, S. C.

$25 WEEKLY WORKING two hours daily. No canvassing. No manufacturing. Lycke, Box 2471, Cleveland 12, Ohio.

BABY SHOE electroplating rectifiers, supplies, chemicals, mountings. Foster's, 1520 Ardmore, Chicago 26.

HOW AND Where To Obtain Capital, small and large loans. Free particulars. Star Service, Wapakoneta, Ohio.

UNPAINTED FIGURINES — Wholesale—Retail. Illustrated list free! Oman, 642P Broadway, St. Paul 1, Minnesota.

MANUFACTURE CLEANERS—Flavors—Cosmetics—Polishes. Formula Catalog Free. Kemico, Parkridge 60, Ill.

DOLL HOSPITAL instruction. Most profitable business. Box 755, Southkent Branch, Grand Rapids 8, Mich.

BE YOUR own boss. Metallize baby shoes at home spare time; your own business. H. Schwieger, Coloma, Wisc.

MAKE MONEY from scrap material. Information free. Balfour Machine Service, Box 305, Braddock, Pa.

AUTOMATIC SAW setter used with Foley filer. Write to Stadick Manufacturing Co., Searles, Minn.

UNPAINTED BOOKENDS, Plaques, Ornaments. List. Haverty Products, 1219-M 8th Ave., Altoona, Penna.

START VENDING Machine route, instructions $1.00. Write National 4243 Sansom, Philadelphia, Pa.

MILLION ARTICLES wholesale. "Supply Source Directory," 25c. Publishers, Box 1302-BII, Detroit 31.

HOME WORKERS. Hand-spin Angora Wool. Either Sex. House of Angora, MI, Springfield, Ill.

$46 FROM SQUARE Foot Plywood. Jigsaw necessary. Write, Woodarts, X-57, Bridgewater, Mass.

SAWDUST. TURN it into cash. Six methods. Instructions 25c. Charles, 12-AQM, Norwood, Ohio.

TIN CANS. Turn them into cash. Nine methods. Instructions 50c. Charles, 12-AQN, Norwood, Ohio.

LIQUID RUBBER. Make flexible molds. Free sample. Chaney, 1130 E. 16th St., Jacksonville 6, Fla.

BABY SHOE Metallizing. Simplified. Modern. Practical System. Schoettle, Friendship 3, Ohio.

UNPAINTED FIGURINES, plaques, statues. List, instructions, dime. Valents, Perry, N. Y.

OPERATE PROFITABLE Lettershop Business. Write Woods Letter Service, Bedford, Penna.

$4,000.00 PROFIT IN two months. No investment. Details 50c. Charles, 12-AQP, Norwood, Ohio.

RECAST OLD batteries into new. Latest Achievements. Battery Laboratories, Minneapolis.

300 WOMEN MAILORDER buyers listed $1.00. Woods Remnants, Bedford, Penna.

52 MAIL SELLING Propositions, 10c. Wehner, Box 142-B, Roxbury 19, Mass.

BUSINESS SERVICE

NATIONALLY ADVERTISED appliances. Wholesale prices free. Belmont Electric, 202 Hinsdale St., Brooklyn 7, N. Y.

CANDYMAKING

MEN—WOMEN—"Everybody Likes Candy." Learn to make professionally at home. (Our 39th year.) Ragsdale Candies, D3, East Orange, N. J.

CARTOONING, SIGNPAINTING, DRAWING AIDS

CARTOON YOUR Way To Success! Internationally known instructor, Raye Burns, will personally teach you to create salable, original cartoons at home. Course of 26 lessons only $2.85. Send remittance with order or write for Free Details and addresses of successful students. Raye Burns School, Box 3583-F, Cleveland 18, Ohio.

"HOW TO Make Money With Simple Cartoons"—a book everyone who likes to draw should have. It is free; no obligation. Simply address Cartoonists Exchange, Dept. 3511, Pleasant Hill, Ohio.

TRICK CARTOONING and Drawing. Amaze your friends! Special prepared 18x24 sheets. Story with each sheet—Set "A"—$1.00. E-Z-Art, Wyckoff, N. J.

EARN MONEY evenings, copying and duplicating comic cartoons for advertisers. Adservice, Argyle (3-B), Wis.

SIGN PAINTING taught at home. Test lesson free. Ben Kerns, Box 812, M. Greenville, S. C.

INTERESTED IN Cartooning? Write, Cartoons, P. O. Box 3291, San Francisco 19, Calif.

CHEMICALS & SUPPLIES

NEW LABORATORY Supply Catalog of Chemicals and Apparatus. Contains many thousands of items, with illustrations. Send 25c. Standard Science Supply Company, 1232 N. Paulina St., Chicago 22.

SILVER TINT Plating Polish $2.00. List 10c. Mazza's Chemicals, 398A Columbia St., Cambridge 41, Mass.

CATALOG: CHEMISTRY, mineralogy, physics, biology, 10c. Tracey Laboratories, Evanston, Ill.

NEW, USED Catalog 10c. Atlantic Laboratory Supply, 21 Wenham, Boston, Mass.

EDUCATION & INSTRUCTION

STOP BEING A Nobody. You'll Never Be Successful Unless You Learn To Speak Correctly in Your Everyday Speech. Complete Course, Also Includes "How To Become A Brilliant Conversationalist." One Of The Famous "Dollar-A-Lesson Courses." 5 Lessons Complete. Get Started. Send $1.00 For First Lesson Or $5.00 For Complete Course. Cincinnati Educational Institute, Dept. J1, Box 1825, Cincinnati (1) Ohio.

PIANO TUNING pays. Learn this profitable profession at home. Our Tonometer and mechanical aids make learning easy. No knowledge music necessary. Diploma granted. Largest and oldest school—51st year. G.I. approved. Write for booklet. Niles Bryant School, 87 Bryant Bldg., Washington 16, D. C.

WANT A Steady Big Pay Job in Diesel? Our approved, easy-to-understand Diesel Training Course qualifies you. Placement advisory service Free. Learn as you earn. Write for free 24 page book today! Interstate Training Service, Dept. 4M, Portland 13, Ore.

EXPORT! LEARN at home from established World Trader. Big paying positions. Your own profitable world-wide business by mail order without capital; or travel abroad. Experience unnecessary. Free booklet. Mellinger, 311 W. Los Angeles 24, Calif.

LEARN TO paint beautiful pictures in oil colors; Real Art method, no drawing. Start painting pictures right away. Enclose $2.00 for the Real Art method. Real Art Studio, Box 152, Station D, Cincinnati, Ohio.

BOOKKEEPERS! INCREASE your earnings! Operate your own simplified "Dollar-A-Week" Bookkeeping and Tax Service. Full or spare time. Details FREE. No obligation. Ellis, Box 202, Cedar Grove, N. C.

$15,000.00 A YEAR from $25.00 a week. That is my record. You can do as well or better. Basic success rules apply to all jobs. Write Success Plan, P. O. Box 32, Friends Station, Richmond, Ind.

FASCINATING, PROFITABLE. Process your own movies. Formulas, drawings, instructions for making necessary equipment $1.00. RexCrafts, 652 Fayette St., Cumberland, Md.

MEDICAL LABORATORY Technicians in great demand. We train you in your own home. Catalogue free. Imperial Technical Institute, Box 973-A, Austin, Tex.

MONEY AND a good profession go together. Learn watch repairing. Easy simplified course. Leonard Shea, 422 Bloomfield Ave., Caldwell, N. J.

USED CORRESPONDENCE Courses and Educational Books bought, sold, rented, catalog free. Educational Exchange, Summerville, Ga.

DEGREES: Home Study. Catalogue. Arts, Sciences, Philosophy, Psychology, Metaphysics, "Esoteric School Sciences," Chesterfield, Indiana.

MAKE UP to $35-$45 Week as a Trained Practical Nurse! Learn quickly at home. Booklet free. Chicago School of Nursing, Dept. M-10, Chicago.

STUDY FOR game warden, fish, park, forestry, and patrol exams. Details free. Write Delmar Institute, C19, Denver, Colo.

ADVANCEMENT ... CORRESPONDENCE "Courselecting"! Fleege, (consultant), $1.00; 2316 94th, Jackson Heights, New York.

SHORTHAND IN One Week! Longhand system. Self-instructor. $1.48. Zinman, 215 West 91, New York 24, New York.

MATHEMATICS. INDIVIDUALIZED Instruction. New Correspondence School. Box 27, Brooklyn 13, New York.

PHOTOGRAPHIC MIND with Supermemory! Write Thor Books, M-11, Box 1210, Chicago.

3800 LATEST USED Correspondence Courses Cat. 50c. Egg, Elmsford. N. Y.

FORMULAS & PLANS

GIANT FORMULA Catalog and Chemical Instruction Sheet—10c. D. Belfort, 216 West Jackson, Chicago 6.

REAL MANUFACTURING formulas. Lists free. W. Cummings, Chemist, Gordon Ave., Syracuse, N. Y.

LABORATORY TESTED Formulas. Lists Free. Pont Chemical Company, Terre Haute 3. Ind.

MALE HELP

FOREIGN EMPLOYMENT. Construction men, building trades mechanics, helpers, office men. Good workers needed for oil projects, mining, pipe lines, dams, power plants, roadways, shipping, etc. Transportation and quarters furnished; high wages. Listings of firms actively working and hiring on projects in South America, Arabia, Asia, Africa, Alaska, Central America, etc. Send $1.00 for foreign construction compendium and application forms. Foreign Service Bureau, Dept. M.I. (Employment), P. O. Box 295, Metuchen, N. J.

"ALASKA—THE Last Frontier" offers unlimited opportunities. $1.00 brings official government map and copyrighted report with Fish and Game rules, listing Fishing, Construction, Mining, Aviation companies. Homestead and Alaskan Highway information. Alaska Opportunist, Dept. MI, P.O. Box 883, Hollywood 28, Calif.

INTERESTED IN Latin American and foreign employment???? $1.00 brings copyrighted Foreign Service Directory listing firms interested in Oil, Construction, Mining, Aviation, Exports and Imports. How-When-Where to apply. Hot list of companies hiring. Global Reports, Dept. MI, P.O. Box 883, Hollywood 28, Calif.

CONSTRUCTION REPORT—World Wide Listings of Projects for Journeymen in all trades published monthly. $1 per copy. Global Reports, P.O. Box 883-MX, Hollywood 28, Calif.

IMMEDIATE OPENING for reliable man with car to call on farmers. No experience necessary. $15 to $20 in a day. Permanent. McNess Company, Dept. 175, Freeport, Ill.

MONEYMAKING OPPORTUNITIES

START YOUR Own Business On Credit. Always your own boss. 1554 Dealers, sold $5,000 to $26,500 in 1948; their average $6,742. We supply stocks, equipment on credit. 200 home necessities. Sales experience not needed to start. Wonderful opportunity to own pleasant, profitable business backed by world-wide industry. Write Rawleigh Co., Dept. K-U-MOM, Freeport, Ill.

VENDING MACHINES—No selling required. Send for Free 32-page illustrated catalog describing our numerous coin machines; also showing you how you can earn Amazing Profits either full or spare time. Parkway Machine Corporation, Dept. # 5, 623 W. North Avenue, Baltimore 17, Md.

MAKE MONEY At Home—Cut grinding costs. Belsaw Powered Saw Gumming Machine precision Joints, Gums, Sharpens circular saws 8 to 48-in. diameter. Portable, fast, accurate. Catalog. Belsaw, 315-F Westport Rd., Kansas City, Mo.

MAKE MONEY At Home as renewal headquarters for all magazines. Big profit in Christmas gift sales. Liberal commissions. Supplies furnished. Catalog Free. Write McGregor Magazine Agency, Dept. 529C, Mount Morris, Ill.

SCHOOL SENIORS—Sell Classmates America's most beautiful Graduation Name Cards. Largest selection. 40% commission. Outsells all others. Free Sample Kit. Printcraft, Dept. I, 1425 E. Elm St., Scranton 5, Pa.

$500 GUARANTEED FOR Christmas Two Hours Daily. No Effort—No Selling. Dignified-Soul Satisfying. Postal Brings Free Details. "Our Silent Reminder" 1715 W. Second, ML, Wichita, Kan.

MAKE $100.00 A month or more during your spare time in your own home. Rush 10c for complete details including our magazine. Siwaslian, 4317-A Gleane St., Elmhurst, New York.

BIG DEMAND For Dental Technicians' Full Or Spare Time, Read; "Dental Mechanics As a Career." Gives Full Particulars. Send $1.00 Today! Equinox Press, M, Ardsley, N. Y.

WANTED HOME Workers: Men-Women. Easy, children can help. Send 25c deposit (Credited) for details, and profitable gift. Bishop Novelties, Box 877-M, Milwaukee 1, Wis.

MAKE EXTRA money at home in spare time. Raise Golden Hamsters. Small investment. Literature free. Golden Gate Hamstery, 631-L Richmond Street, El Cerrito, Calif.

ELITE COLLECTION. New edition, contains 137 practical Money-Making Plans; local and mail order. Particulars free. Elite Co., 220-G Grand St., New York 13, N. Y.

WIN CONTEST Money. General Contest Bulletin gives hundreds of tips. Lists current contests and rules. Sample 25c. General Contester, 1609-B East 5th, Duluth 5, Minn.

HITCH YOUR Wagon To a ConteStar! Win huge cash prizes, automobiles, new homes, etc. Enclose 3c stamp. National Contest Bulletin, Box 2685-R, Miami 31, Fla.

HIGHEST PROFITS—Manufacturing own products. Moneymaking formula book, 50c postpaid. Charlow Company, Box 223, State Capitol, Albany 1, New York.

WOULD YOU pay 3%—first $350 made? Book "505 Odd Successful Enterprises" free! Expect something odd! Pacific, Oceanside, Calif.

THERE'S MONEY in trade journal writing. Learn with established writer. Criticism per manuscript $1.00. Alvin Bantien, Armada, Mich.

$ HUNDREDS—PROFITABLE ideas, tips, sources for extra income. Folder free. Ryane's, Kensington, P.O. Box 16, Buffalo 15-L, N. Y.

MONEY FROM Water, Salt and Air. Send 25c in coin for copyrighted information. Box 36, Linwood Station, Detroit 6, Mich.

DETECTIVES EARN Big Money. Experience unnecessary. Particulars free. George Wagoner, 125-J West 86th, N. Y.

MONEYMAKING IN Mail Order is fascinating. Send for "Superlux Opportunities." L. J. Wiltsch, Steelville, Mo.

EARN MONEY evenings, copying and duplicating comic cartoons for advertisers. Adservice, Argyle (3), Wis.

WANT NOTARY Public Appointment? Official in usually 10 days. Stationers Exchange, Boerne 50, Texas.

MAIL ORDER opportunities galore. Write today: Sanchez, Box 66-C, Chelsea Station, New York 11.

UNUSUAL MAIL order—home work opportunities. Guthrie, 2125-F Maryland Ave., Norfolk 13, Va.

PROFITS FROM Plastics. Formula 25c. Gerald McNeely, Box 524, Rochester, Minn.

NEED SPENDING Money? Magazine of Opportunities 10c. Sunrae, Ogema, Wis.

$123.00 PROFIT! FROM 75c. Send $1.00 for details. P.O. Box 29, Richmond, Ind.

MAKE ARCH supports. Particulars free. Corssen, 2638 Geyer, St. Louis 4, Mo.

$5 AN HOUR while learning watch-clock repairing. See ad page 46.

POULTRY

RAISE FRYERS new easy way. One man home plant earns $500 monthly. Circulars free. Poultrymans Institute, 1046-R So. Olive, Los Angeles 15, Calif.

RAISE TURKEYS The New Way. Write for free information explaining how to make up to $3,000 in your own backyard. Address National Turkey Institute, Dept. 44, Columbus, Kans.

PROFITABLE OCCUPATIONS

YOUR OWN profitable home business. Preserve live flowers to last forever. New simple discovery. Enormous demand all year 'round. Tremendous profits! Light fascinating work. Send $2.00 for working equipment, instructions, and valuable sales plans. Satisfaction guaranteed or money promptly refunded. Alfred Hermansen, 210 Fifth Ave., Suite 1102B, New York 10, N. Y.

BE INDEPENDENT, be secure, have your own profitable business—earn $10.00 and more a day making beautiful, fast-selling lamps at home. No equipment needed. Illustrated course teaches you quickly. Course, parts catalog, wholesale price list—only $2.00. Gearon Company, Dept. 200-C11, 27 South Desplaines, Chicago 6, Ill.

LOOK HERE! Wanted—Men and women to start in business on credit. Sell some 200 farm-home Products. Thousands our Dealers now make quick sales, big profits. For particulars write Rawleigh's, Dept. K-192 MOM, Freeport, Ill.

BOOKKEEPERS: EARN up to $520 month with own bookkeeping service for small firms; operate from home or office; simplified system, proved plan. Tax-Saver System, Dept. M, Fort Worth, Tex.

MAKE HOLIDAY Flowers, Novelties. Wonderful home business pays excellent profits. Literature free. Velva Artcrafts, 324-V East 14, New York 3, N. Y.

$40.00 WEEKLY, MADE growing mushrooms, Fresh, Dried, Dominion Patent 331583. Free Spawn. North American, 169M Yonge, Toronto, Canada.

REFRIGERATION AND Air Conditioning. Complete, illustrated course. Free booklet. Mechanics School, 7217 South Broadway, Los Angeles 3.

COLOR ETCH. Learn to etch color pictures and designs in glass. Sample and directions $1.00. Roger Hopps, 2314 Devoy, Memphis, Tenn.

$5,000 FROM HALF acre growing Ginseng, crop bought. Particulars 10c. Associated Growers, 1169 Corydon, Winnipeg, Canada.

DETECTIVES—MAKE Secret Investigations. Interesting occupation. Write, George Wagner, J-125 West 86th St.,

RAISE FISHWORMS, Easy, Profitable. Send 25c in coin for complete instructions. Huffmans Worm Ranch, Rives Junction, Mich.

$400.00 MONTHLY, RAISING Angora Rabbits. Particulars free. White's Rabbitry, Newark, Ohio.

RADIO SUPPLIES & EQUIPMENT

SNOOPERSCOPE TUBE Permits Nighttime Vision, Tube And Complete Instructions $14.95. Limited Quantity. Infrared Filters 15c. Voltmeter, Oscillator Kit Special $2.95. Precise, 942 Kings Highway, Brooklyn 23, N. Y.

HEADPHONES. GUARANTEED U. S. Signal Corps used headsets with adjustable leather headbands and Black Bakelite Earphones. Special now $1.99. Allen Radio, Dept. HMI, Clinton, Mo.

MAKE SIMPLE, tubeless, batteryless, distance-getting crystal radios. Crystal and illustrated instructions 25 cents postpaid. Allen, 427-M, Clinton, Mo.

15 TESTED ONE-TUBE circuits, including "Radiobuilder," Catalog—25c. Laboratories, 578-K, San Carlos, Calif.

TINY-TONE EXPERIMENTAL Microphone Kit. 50c postpaid. Buckmann, 215 River, Hackensack, N. J.

MAKE FAMOUS, sensitive, crystal radios. Instructions, crystal, feelers 25c. Borri Mark, III.

STAMMERING

STUTTERING OR Stammering Corrected at Home. Amazingly successful method. Send for free literature showing how you, too, may overcome stuttering at home. The Atheneum, M-11, 1714 Chestnut, St. Louis 3, Mo.

STAMMERING CORRECTED at Home by Proven Personal Method, "How to Correct Stammering" $3.00. Information Free. Chas. Bunker, Box 1132, Chicago 90, Ill.

STOP STAMMERING. Instructions $1.00. J. Allen, Box 114, Saskatoon, Sask., Canada.

TREASURE FINDERS

TREASURE-MINERAL LOCATORS. M-Scope. Low Priced, lightweight, unsurpassed in efficiency. Revolutionizes locating of minerals and precious metals. Geiger Counters for Uranium ores. Time payment plan. Factory guaranteed. Free 16-page booklet upon request. Fisher Research Laboratory, Inc., Palo Alto, Calif.

GEIGER COUNTERS for locating Uranium; Metal Detectors for Gold, Silver and minerals. Lightweight, low cost, ultra-sensitive. None finer at any price. Free information. Detectron Co., 5637 Cahuenga Blvd., North Hollywood, Calif.

TREASURE—MINERAL Locators, Goldak now offers a metal and mineral locator for $75.00. Also geiger counters reduced to $95.00. Write the Goldak Company, 1546 West Glenoaks, Glendale 1, Calif.

TREASURE MAP. Authentic Photocopy of Original, describing where money is buried. $2.00 Postpaid. Details 25c. Clyde George, Box 4067, Greensboro, N. C.

METAL DETECTORS. The very latest circuit. Send 25c for literature. Hedden Metal Detectors, 3329 Liberty Ave., Pittsburgh 1, Penna.

PRINTING, MULTIGRAPHING, PHOTOGRAPHY, ETC.

300 GLOSS BLOTTER Business Cards $1.00. 250 Name-address Stickers 25c. 500 Regulation Parcelpost Labels $2.00. 2000 3"x6" Circulars $3.00. Acmeprint-7, Hendersonville 5, N. C.

HOW TO Save On Printing and Office Supplies. New illustrated catalog. 10c refunded first order. Eddy Company, Southington 2, Conn.

SEND 10c NOW, for our 48 page 1949 price list—refunded first order. McCall Press, 1326 South 27th, Omaha (5), Neb.

1000 BUSINESS CARDS $2.50 Prepaid. All types printing. Samples free. Reliable Print Shop, 907 East Jefferson, Louisville 6, Ky.

MIMEOGRAPHING BY expert, reasonable, prepaid free sample, prices. Arnold, 1305q Gough, San Francisco 9, Calif.

BUSINESS, PERSONAL Stationery. State requirements. Samples. Mero Products, 98 Morrison, Punxsutawney, Penna.

SAVE MONEY On Printing—Stationery, Checks, Cards. Samples, Prices Free. Stumpprint, South Whitley 1, Ind.

MIMEOGRAPHING ANY copy; bargain prices! Topical Emprise, 1527 Highland, Box 42-Z, Louisville 4, Ky.

QUALITY PRINTING Samples Free. Narlock, 1215 S. Van Buren, Bay City, Mich.

PRINTING OUTFITS & SUPPLIES

PRINT YOUR own cards, stationery, circulars, advertising. Save money. Simple rules. Print for others, nice profit. Raised printing like engraving too. Have home shop. Details free. Kelsey Presses, L-57, Meriden, Conn.

MAKE YOUR own rubber printing cuts. Self-molding process. Plexirubber, Argyle (3), Wisconsin.

HOBBY PRINTERS—Join American Amateur Press Association, 822 South Orleans, Tampa, Fla.

PRINTING MACHINERY. Type, Supplies. Lists 3c. Turnbaugh Service, Loysville, Penna.

RUBBER STAMPS & MARKING DEVICES

START STATIONERY And Office Supply Business. 290 Page Catalog $1.50 Deposit For Small Catalog (Refunded). Write Or Wire, Miles Specialties, Kokomo, Ind.

YOUR NAME and address on a deluxe, cushioned 3-line Rubber Stamp sent postpaid for $1. Riverdale Press, Box 102, Riverdale, Md.

READY MADE stock stamps. Big list. Criterion Stamps, P.O. Box 2326, Denver 26, Colo.

3 LINES 45c, INDEXED 55c, Pads 35c. Print-Well, Wauwatusa, Wis.

TYPEWRITERS, DUPLICATORS, OFFICE DEVICES

ADVERTISE. INCREASE business. "Printomatic" selffeeding "Mimeograph" Post Card Duplicator prints, reproduces, thousands anything typewritten, handwritten, $13.50. Literature. Pittsburgh Typewriter Company, 336-I Fourth Avenue, Pittsburgh 22, Pa.

HOBBIES & COLLECTIONS

THREE MILITARY Emblems and price list 10c. Hobbyguild, 57M Sumner Ave., Brooklyn, N. Y.

INDIAN CURIOS, RELICS, ANTIQUE FIREARMS

1950 CATALOG—SELLING 450 Historical Firearms—20,000 Indian Relics, Coins, Gold Dollars, Collectors Cartridges, Swords, Civilwar Muskets, Kentucky Rifles, Pistols, Percussion Caps, Bayonets, Bullet Molds, Powderhorns, Minerals, Fossils, Flintlocks, Confederate Money, Ramrods, Steerhorns, Blunderbusses, Mounted Owls, Pheasants, Arrowheads, Tomahawks, Spearheads, Gempoints, Bannerstones, 1950 Illustrated Catalog 25c. Heike, Wenona 15, Ill.

10 ANCIENT INDIAN arrowheads, $1.00. Ancient tomahawk, $1.00. Stone axe, $2.00. List Free. Lear's, Kirby, Ark.

8 ARROWHEADS $1.48—TOMAHAWK $2.85—Musket $12.50—Bayonet $1.98—Sword $7.50. Heike, Wenona 15, Ill.

7 FINE OR 20 common arrowheads $1.00. L. Crandall, Box 697, Idaho Falls, Idaho.

RARE COINS

FREE! FOREIGN Coin, banknote and Coin Collectors Illustrated Catalog to approval service applicants. Send 3c postage. Tatham Coinco, Springfield 9, Mass.

OLD UNCIRCULATED Dollars! "Good Luck" Tokens. $3.00 each. Two different $5.00. Coin Magazine accompanies. Willard, 5719 Kenmore, Chicago 40.

COMMEMORATIVE $½—WASHINGTON, Stone Mountain, Columbian, $1.50 each. Illustrated Catalogue, 25c. Shultz, Salt Lake 9, Utah.

100 DIFFERENT FOREIGN Coins $3.00. Parker, 1254 Market, San Francisco 2, Calif.

COINS WANTED: Itemized list 20c. Elsholz, Box 9014, M, Pittsburgh 24, Penna.

STAMP COLLECTING

ZOWIE-E-E! A Barrel of Fun for only a Dime! 500 United States Stamps—Absolutely unpicked and unsorted—just as received from church missions. Many varieties, including large commemoratives, airmails, high denominations up to $5.00! Stampdom's biggest package of fun—and you might find something really valuable!! Price only 10c to serious approval service applicants. Money back if not delighted. Illustrated bargain lists with each order. Mystic Stamp Company, Department 30, Camden, New York.

FREE. ABSOLUTELY Free. $22.50 catalogue value in better grade stamps, including Airmails, Pictorials, Commemoratives. Also free. International albums and Scott catalogues. Free hinges. Free mystery sets to $1.00 value. Free $5.00 Presidential. All free to approval applicants buying under colossal Raymax plan. Raymax, 123-K William St., N. Y. C. 7.

YOU NEED these! All six for 10c! To introduce our Exceptional Approval Service, we'll send you: 1. Pocket Stock Book. 2. Watermark Detector. 3. Stamp Tongs. 4. Perforation Gauge. 5. Book for Duplicates. 6. Package of Stamp Hinges. All only 10c to approval applicants! Free! Big list other bargains. Jamestown Stamp Co., Dept. N, Jamestown, New York.

POSITIVELY GREATEST Free Offer! Latest Scott's International $6.00 stamp album—covering entire world, contains 36,000 illustrated descriptive spaces; Scott's 1950 Standard $7.00 catalogues "Philately's Encyclopedia" — absolutely Free to applicants for foreign approvals becoming customers. Approval Service, P. O. Box 1700, San Francisco.

FREE—FAMOUS Americans Set, Flag Set, National Parks Set, and Presidential Set to $5.00. A total of 90 Stamps Free to customers for our unsurpassed U. S. and Foreign Selections. Send 3c for 15 of the above stamps and full particulars. Triboro Stamp Co., 145 Nassau St., Dept. 308, N. Y.

FLAGS! FLAGS! Beautiful selection foreign flag stamps. Packet 25 different countries, including big Roosevelt triangle, airmails, scarce Tasmania, old Victoria, Boy Scout stamp, etc. Packet 10 Russia. Perforation gauge. Total value over $1.00. Everything, only 10c to approval applicants. Odd Stamps Company, Dept. B11, Palm City, Calif.

$5.00 CATALOG PRICE for 10c! (1) Big collection 112 all different stamps from Africa, South America, South Sea Islands. (2) Four desirable unused U. S. cataloging 40c. (3) Fine packet 25 British Colonies—Burma, Solomon Islands, etc. (4) U. S. $5.00 high value. Everything (all four items) only 10c with approvals. Crystal, Littleton 42, N. H.

GIBRALTAR PACKET Free—Nice collection Gibraltar—New Zealand Centennial—British Uganda—French Colonials—Early British Colonial—West Indies—South America—War stamps plus Philatopic Monthly Magazine. All for 5c postage. Empire Stamp Company, Dept. MM, Toronto 5, Ontario.

WOW! $10.00 WORTH of Fun 10c! What a treasure hunt! Big package 500 Foreign Stamps, including airmails, pictorials and others from the world over; stamps worth up to 25c each. This offer sent for 10c to Approval Applicants Only. Jamestown Stamp Co., Dept. 31, Jamestown, N. Y.

WOW!! WE must be crazy with the heat to give you 10 Foreign Used Covers from 10 Different Countries, 3 Unused Philippine Blocks, Rare Armenia issue worth 75c . . . Yes, a $2.00 value for only 10c if you ask for approvals. Gulf Coast Stamp Company, 1413 Sterling Building, Houston, Tex.

FREE! COLLECTION over 100 stamps of world—odd stamps, planes, camels, cavalry charge, leprosy stamp, new Leipzig Fair set, many others all to approval buyers; plus Scott International Albums, stamp catalogs. Bell Stamp Service, Dept. C, 4248 Elizabeth St., Bell, Calif.

FREE! NEGRO Triangle; Turks Islands, Dakar; Guinea; Palestine; "Fairy Tale," Pirate Chart, Map, Sea Lion, Snake stamps; French, British, Portuguese Colonies, etc. Free for 3c postage. Approvals. Potomac Stampshop, Washington 10, D. C.

200 BRITISH EMPIRE Stamps! Norfolk, Tokelau Islands, Grahamland, Pakistan, Nepal, big stamp of murdered Mahatma Gandhi; many others. Stamps cataloging up to 20c each!! Only 10c!! Kenmore Stamps, Arlington 74-A10, Mass.

$1—$2—$5 UNITED STATES, Commemoratives, airmail, high values in large collection United States stamps only 5c to applicants. United States approvals. Metropolitan, 140C Nassau, New York 7.

LION TRIANGLE, Biggest Diamond. San Marino showing First American Stamp, Canal Zone, Constantine, Rheinland, and 26 Different Others—All 5c. Approvals. Grayson Stampco, Sherman, Tex.

307 ALL DIFFERENT 10c. Commemoratives, triangles, bicolored beauties, high values. Strange countries. New varieties galore. Only 10c with approvals. Garcelon, Box 475, Calais, Me.

LESS THAN Wholesale! 50 different U. S. commemoratives (largest size only) with approvals, only 25c (coin). No dealers. M. I. Calumet, 523 Detroit, Hammond, Ind.

UNUSED COMMEMORATIVE stamp collection including airmails, pictorials, high values, sets. Only 3c. Approvals. Sunlite, Box 1259-K Grand Central, New York 17.

UNITED STATES Stamps nearly 100 years old, Roosevelt set, others, 40c value—only 5c to applicants United States approvals. Wakonda, 140L Nassau, New York 7.

FINE COLLECTION U. S. and Foreign, Old and Recent, Mint and Used 200 different 10c to approval applicants. Fred Kunkel, 146 Dunbar, Long Branch, N. J.

WORLD'S LARGEST Stamp (7½x14 inches). A real curiosity! Retails for 50c, only 3c to approval applicants. Tatham Stamp Co., Springfield 9, Mass.

FREE! CANADIAN sets, Royal Visit, George VI, George V, Coronation, Jubilee, others, to approval applicants. Ensign, Box 118-X, South Orange, N. J.

BARGAINS! 2,000 FOREIGN stamps $1.00, 5,000 $2.00. 2,000 U.S. $1.00, 5,000 $2.00. Standard Products, Atlantic Building, Washington 400, D. C.

FREE "STAMP Finder." Tells instantly country to which any stamp belongs. 32 pages profusely illustrated. Approvals. Garcelon, Calais, 10, Me.

50 DIFFERENT, UNITED States Block, Russia Airmails Packet, Package Hinges. 10c. Approvals. Greenwood, 263 Meridian, Miami Beach, Fla.

GIANT UNITED States Catalog! Complete: 128 Pages, 1,000 Pictures' 25c (Deductable). Harrisco, 201 Transit Bldg., Boston 17, Mass.

HAVE FUN, add thousands of stamps to your collection at 1c each. Write for my Economy 1c Approvals. Joe Goldman (MX); Lynbrook, N. Y.

100 DIFFERENT STAMPS free with approvals at 60% discount. Martinsen, Box 115A, Washington Bridge Station, New York 33, N. Y.

FREE! TWO Mint Sets with Approvals. Prices 15% under most dealers. Three Sons Stamp Co., 172 Hartsdale Rd., Rochester 9, N. Y.

TREASURE HUNT Approvals. Penny stamps galore. Ask about our profit sharing plan. Reed Company, Box 980M, Chicago 90, Ill.

UNITED STATES approvals, complete coverage, fine quality, attractive prices. Seminole Stamps, Box 1138-M, Coral Gables, Fla.

TOPS! OUR booklet "How To Collect Stamps." Send for your free copy today! Littleton Stampco, Littleton 30, N. H.

40 U. S. INCLUDING airmail commemoratives 10c. Approvals. Royce Menerey, 3321 N. Cramer, Milwaukee 11, Wis.

FREE! RARE Polish Roosevelt Set complete. Economical, quality approvals included. Riedell, Greensburg 12, Penna.

SURPRISE PACKETS. $5.00 catalog value guaranteed. 25c to approval applicants only. Bjorn Nielsen, Monmouth 1, Maine.

200 DIFFERENT, INCLUDING Roosevelt triangle. 5c to approval applicants. K. Avalon Stamp Co., Springfield, Mass.

FIFTY DIFFERENT U. S.; Commemoratives, Dues, etc. All for 5c. Ed. Keller, 3041 Belonda, Pittsburgh 11, Penna.

FREE CHINA Navigation Issue With Foreign Approvals. Modern Stampco, Box 12C, Wakefield Station, N. Y.

SELECTED U. S. Mint Roosevelt and Flag sets. Both. Only $1.00. Approvals. Quinn, M-570, Madison 1, Wis.

115 DIFFERENT, HITLERS, Roosevelt, Liberia, Vatican, etc. 25c. Buckey, MI-208 Ludlow Bldg., Dayton 2, Ohio.

$150,000 CHINESE SET plus gigantic pricelist 5c. Martin Band, 4143M 39th Place, Sunnyside, New York.

GIVEN "ROUND The World" paket to approval applicants. Lange, Box 21, Hub Station, New York 55.

PHILIPPINES 20TH century approvals. Over 50% catalog discount. Afran, Box 1338, San Francisco, Calif.

GENUINE "GOYA Nude" set (Catalogs 55c) 15c. Approvals. Royal Stamp Company, Tamaqua 4, Penna.

1865 HONDURAS MINT 5c with approvals. Townsend, 2036 South 59th St., Philadelphia 43, Penna.

100 DIFFERENT FOREIGN 10c. Approvals. Karr Ross, Dept. C, Box 3266, Washington 10, D. C.

50 DIFF. FINLAND 10c with ¼—½—1c approvals. Carroll's, 4357-B. S. Hoover, Los Angeles 37, Calif.

LIBERIAN TRIANGULARS, 10c with approvals. Vargo Stamps, 6044 S. Fairfield, Chicago 29, Ill.

1862 PRINCE EDWARD Islands—just 3c with approvals. Viking, 130-M Clinton St., Brooklyn, N. Y.

PENNY APPROVALS that satisfy. Neil Gronberg, Box 5441-M, Philadelphia 43, Penna.

DO YOU want U. S. approvals? Write Edward Wenigman, 1933 Patterson, Chicago.

EXCHANGE STAMPS Universe, particulars Free. "Exchangers" BRY 156 Seine, France.

80 NORTH AMERICAN 5c with approvals. Bryson, Drawer F-ML, Rossford, Ohio.

VALUE OLD stamps, cent approvals. Schmidt, 311 Central Ave., Jersey City, N. J.

50,000 STAMP GRABBAGS 25c each. Anderson, 630 Bingaman, Reading 3, Penna.

50 DIFFERENT U.S. 10c. No approvals. Pricelist free. Seidenberg. Cassopolis, Mich.

100 STAMPS, HINGES, Gauge—15c. Northeast, Box 6618, Kansas City 1, Mo.

FREE! ILLUSTRATED United States Catalog. Low Prices! Americo, Bristol, Conn.

750 FRANCE AND Colonies stamps 10c. Littleton Stamp Co., Littleton 27, N. H.

FREE! COMPLETE Balkan aviation set with approvals. Beaman, Leeds 8, Ala.

MONACO NUDES Set—10c!! Approvals. Atlas-N, 3210 Republic, Racine, Wis.

100 DIFFERENT HUNGARIAN 20c. Roush Stamps, 51 Chestnut, Mansfield, Ohio.

FREE—10 JAPAN war stamps. Approvals. Schroeder, 636 Charles, St. Paul 4, Minn.

10 U. S. Over 40 years Old 5c Approvals. Scott, Middle St., Lexington, Mass, 7.

FIFTY STAMPS from Fifty Countries 10c. Garrow, Montevista, Chula Vista, Calif.

FREE! TINY Chinese "Midget" War set Approvals. Seminole, Leeds 8, Ala.

CASH FOR Your Duplicates! Particulars Free. Goliath, Bethlehem 5, N. H.

WRITE TODAY for free copy: Stamp News Digest, Marysville 3, Wash.

BECOME A Successful Stamp Dealer. Polzin, Box 1069, Milwaukee, Wis.

CASH FOR stamps. Send yours today. Miller Stamp, Malden 48, Mass.

FREE! CRYSTAL-MOUNT samples! Harris & Co., 201 Transit Bldg., Boston.

FREE-ILLUSTRATED CATALOG. Kenmore Stamps, 74-C9, Arlington, Mass.

500 U. S. OFF PAPER, 25c. Buckeye, Box 53, Mansfield, Ohio.

BODY-BUILDING COURSES

6 BODYBUILDING Courses, four Barbell, two Dumbbell, in 53-page musclebuilding book with six illustrated wallcharts, $1. Paramount, 2422 E. 23rd, Los Angeles 11, Calif.

PHYSICAL PERFECTION. 12 courses $2.00 (news and pictures 10c). Sid's System, M1, Southgate, Calif.

BAR-BELLS, DUMBBELLS, exercise equipment. Courses. Free booklet. Good Barbell Co., Reading, Penna.

MASSIVE PROPORTIONS—Barbells—Personal Course—$13.75. Muscle Finder $1.00. Egg Elmsford, N. Y.

BARBELLS! MUSCULAR physique, strength. Send stamp. Jackson Barbells, Springfield, N. J.

BARBELLS, DUMBELLS. Inquiries invited. York Barbells (Canada), Scarborough Bluffs, 26, Ont.

HANDBALANCING IS fun! Easily learned. Write. Power, 923 W. Vine, Kalamazoo, Mich.

CHALK TALKS

TRICK CHALK Stunts. Catalog 10c. Cartoonist John Balda, Oshkosh, Wis.

DETECTIVES

DETECTIVES—WORK home—travel. Experience unnecessary. Detective Particulars free. Write. George Wagner, J-125 West 86th, N. Y.

BE SPECIAL Police Officer your town. Own boss. Excellent earnings. Details $1.00. Robert Malone, 1114 East 53rd, Tacoma, Wash.

DETECTIVE TRAINING

DETECTIVE TRAINING. Robert B. Phillips, Sr., Founder. 35 years Detective Experience, Formerly U. S. Gov. Special Agent. For Free Particulars Write The Phillips Secret Service System, 1917-G North Kenneth Ave., Chicago 39, Ill.

GAMES—ENTERTAINMENT

PLAY FOOTBALL, 15"x26" checkered matboard field, adjustable goals, 23 characterized counters, complete instructions, $1.65 prepaid. Scrimmage Club, 2220 North 33rd Avenue, Omaha 10, Nebr.

PHOTOGRAPHIC MIND with Supermemory! Write Thor Books, F-11, Box 1210, Chicago.

TRIPLE-DEAL 10c, OVERBAUGH, P. O. Box 842, Denver 1, Colo.

HYPNOTISM

HOW TO Hypnotize! Amazing, easy-to-learn illustrated, self-study lessons. Complete course—includes: hypnotism over telephone, on stage, conquering timidity, dominating others. Teaches you how to develop your personal power. Full price only $1.95. Send no money—pay postman C.O.D. Satisfaction or refund! Order "Hypnotism Course" today. Nelson Company, Dept. 2-L3, Chicago 5.

LEARN TO Hypnotize. Yes, Anyone. Self-hypnosis fully explained. You Are Told Exactly What To Say And Do. Send for "Hynotism Revealed".....$1. Twelve Inch Hynotism Record Inducing Hypnotism, Selfhypnosis.....$5. Personal Instruction Available. Melvin Powers, Professional Hypnotist, 1324 Wilshire, Hollywood 14N, California.

COMPLETE ILLUSTRATED Course of "Genuine Hypnotism" including an instantaneous method and self-hypnosis. $1.00. Money-back guarantee. Henry A. Fowler, 650 Prospect Place, Brooklyn 16, N. Y.

HYPNOTISM, SELF-HYPNOSIS correspondence course. Request free booklet. Craft Publications R2, 601A S. Vermont, Los Angeles 5, Calif.

AMAZING—MYSTIFYING, learn to be expert hypnotist, free details. Kenneth Bagwell, Institute of Hypnotism, Frederick, Okla.

SELF-HYPNOSIS. AMAZING new book—guaranteed! $2.00. Psyche, 542-RB 5th Ave., New York 19, N. Y.

MAGIC TRICKS, JOKERS, PUZZLES

500 TRICKS YOU can do! Send 10c for Douglas famous Catalog, best in magic at lowest prices. Unequalled service to magicians for 30 years. Douglas Magicland, Dept. 3, Dallas, Texas.

AMAZING GHOST Quarter Trick Free if 25c is sent for Big Illustrated Catalog listing 500 Wonderful Magic Tricks. Rush 25c Now. The Magician, 2463-E Kensington Ave., Phila. 25, Pa.

400-PAGE CATALOGUE of 2,000 tricks, pocket, parlor, stage. World's finest magic. Send $1.00 for catalogue (refunded first $5.00 order). Kanter's, R-1311 Walnut, Philadelphia 7.

LARGE 160 PAGE magic catalog 35c for beginners and professionals. Chicago Magic Company, 2300-F No. Mason Avenue, Chicago 39.

500 TRICKS CATALOG and book "84 Card Tricks," both only 50c. Robbins Co., 152-P W. 42nd St., New York.

BE A Magician. Large professional magic catalog of latest tricks, 35c. Ireland, 107 North Dearborn, Chicago 2.

WE SUPPLY every noted magician. Large Professional catalog 50c. Holden, 222 West 42nd St., New York.

LEARN MAGIC, Ventriloquism, Mind-reading. Write for particulars. Quackenbusch, Big Flats, N. Y.

"VENTRILLO," PROFESSIONAL Voice-throwing Instrument with Catalog 25c. Box 971-M, Philadelphia.

16 WORLD'S BEST card tricks and catalog 25c. Sterling Magic, Box 191, Royal Oak, Mich.

MAGIC, NOVELTIES, moneymakers. Catalog 10c. Newton Company, Bonham 2, Texas.

DOLLAR MAGIC Set Free with Catalog 25! 4462-M Germantown, Philadelphia.

DOLLAR MAGIC Set Free with Catalog 25! 2404 N. 15, Philadelphia.

MUSIC INSTRUMENTS & INSTRUCTION

SONG WRITERS, Attention! The amazing demand for phonograph records warrants your immediate investigation. We are offering new writers the services of hit composers on any likely poems on reduced percentage basis. Recola Recording Company, Hollywood 28, Calif.

POEMS WANTED for musical setting. Send poems for free examination. Five Star Music Masters, 629 Beacon Bldg., Boston, Mass.

VOICE! EFFORTLESS-CONTROL! 15 Lessons $10.00. Cor Studio, 14356M Jersey Ave., Norwalk, Calif.

HILLBILLY POLKA records, late, old—29c. Catalog 3c. F-L Shop, Box 19-R, N. Y. C. 35, N. Y.

WURLITZER TENOR Saxophone $55.00. James Christian, Box 5061, Birmingham 8, Ala.

NOVELTIES, ETC.

KITE FANS: Roll-O-Kite—Looks like giant spool—spins as it flys. Amazing performance. 50c. Roll-O-Kite, 737 S. Westlake Ave., Los Angeles 5, Calif.

DOUBLETALK, LAUGHS Galore. Terrific! $1.00 Postpaid. Pixfair, 1604 Ft. Lauderdale, Fla.

TATTOOING SUPPLIES

TATTOOING OUTFITS. Supplies. Illustrated list Free. Zeis, 728 Leslie, Rockford, Ill.

VENTRILOQUISM

LEARN VENTRILOQUISM. 3c stamp brings particulars. Smith, Dept. 250, 901 Bigelow, Peoria 5, Ill.

BOOKS, PERIODICALS, PICTURES, POSTCARDS

USED EDUCATIONAL books and courses sold, rented, exchanged. Inexpensive. Money-back guarantee. Lists free. (Books and Courses bought.) Write Lee Mountain, Pisgah, Ala.

BOOKFINDERS! UNUSUAL, scarce, out-of-print books. Quickly supplied. Send wants. Bookfinder Clifton, Box 1377MI, Beverly Hills, Calif.

ADULT BOOKS—Unusual—Revealing—illustrated. Five $1.00. Catalogs 10c. Kogan, 1032-MI, Church Annex, New York 8.

NATIONAL GEOGRAPHIC Magazines, 1888-1949. Any issue. Periodical Service, Box 327-M, Swarthmore, Penna.

BOOKHUNTERS! ALL subjects. Send wants! Jaher Book Service, 620-M East 178 Street, New York 57.

OZARKS! BOOK list and literature 25c. Rayburn's Books, Eureka Springs, Ark.

BOOKS! HUGE stock! Paramount Book Service, 39 Hopedale, Allston 34, Mass.

CAMERAS, EQUIPMENT & PHOTO SUPPLIES

ENLARGER: FIFTY cents will buy the complete plans and instructions for the building of MI's Parallel Arm Enlarger. It has been especially designed to accommodate all cameras from a 35mm Argus to a 4x5 Speed Graphic. Your own camera and lens form the optical and focusing system. This enlarger has been built by dozens of enthusiastic amateur photographers. Send your remittance and request to Fawcett Publications, Inc., Greenwich, Conn. Ask for Plan No. P-2A.

35MM ENLARGER. Large-size plans for the construction of an enlarger expressly designed to be used with miniature negatives are now available for readers of MI. This enlarger uses a single condenser which also serves to hold the negative absolutely flat in the focal plane. For the easy-to-follow drawing send 50 cents to the MI Reader Plan Service. Fawcett Publications, Inc., Greenwich, Conn. Ask for Plan No. P-4A.

CONTACT PRINTER. Plans and instructions to build MI's famous contact printer now available. Will take all negatives up to and including 4x5 in. as well as postcard size. The easy-to-follow drawings can be used as full-size templates if desired. Send 50c to Fawcett Publications, Inc., Greenwich, Conn., and ask for Feature Plan No. P-1.

PHOTOGRAPHY FOR pleasure or profit. Learn at home. Practical basic training. Long established school. Write for free booklet. American School of Photography, 1315 Michigan, Dept. 204-B, Chicago 5.

AMAZING! PIXIE Camera; wrist watch size. Takes colored or b&w $4.95. Film $1.29. Free developing. Booklet on request. Harry Scroggs, Inc., Box 543-E, Hawthorne, Calif.

BLUEPRINT MACHINE—Pease H-22-W. 42" capacity, prints, develops, dries, continuous, excellent condition. Reasonable. 197 College St., Burlington, Vt. Ph. 3808.

HOME MOVIES

UNUSUAL 8-16MM. Film Subjects. Kodachrome Projection Length Sample "Allure," $1.00. "Strip Polka" 100-Ft. 16mm. Sound, $6.50. Art Slides in color, sample 50c, 5 for $2.00. Films Exchanged. Bargains! Big Catalog, 25c; Refunded First Order. National Film Supply, Broadway Sta. (E), Toledo 9, Ohio.

GUARANTEED FRESH anti-halo outdoor movie film! Weston 16! Daylight loading! Processing free! Three spools double 8mm, $4.50! Six single 8mm for Univex, $4.60! Postpaid! Catalog. Filmcraft, 47th Holly, Kansas City 2, Mo.

85 KODACHROME MOVIES! War, Atom Bomb, Travel, Air, National Parks, Beautiful Models. Catalog, 4c stamp. 2 scene "Waikiki" sample, $1.00. Specify 8mm. or 16mm. World In Color Productions, Elmira, N. Y.

FREE PROCESSED Film. Weston 10, 100 ft. 16mm $3.25. 25 ft. double 8mm $1.50. Without Processing 100 ft. Double 8mm $2.35, 16mm $2.25. Free Circulars. Fromaders, Davenport 8, Iowa.

FREE, MOVIE Catalog; sample films, 10c. Big Bargains. Goodwill Company, Jackson, Tenn.

MOTION PICTURES & SOUND EQUIPMENT

8-16MM. SILENT-SOUND films. Complete rental library. All latest subjects. Free catalogue (sample film 10c). Garden Film, 317 W. 50th, N. Y. 19.

PHOTO FINISHING

FOR DISCRIMINATING Camera Fans! Ray's Special Value Coupon. 3 great offers. 8 exposure roll developed, plus 8 Raykraft (negative size) prints only 25c—2 each (negative size) prints only 30c—8 (negative size) prints plus our new distinctive Portrait Proportional Enlargement only 30c. Money saving Premium tickets for cameras, albums, enlargements, etc.—included with every order. Don't Delay. Send Coupon ad today. Ray's Photo Service, 314 Ray Bldg., La-Crosse, Wis.

PHOTOGRAPHY FOR pleasure or profit. Learn at home. Practical basic training. Long established school. Write for free booklet. American School of Photography, 1315 Michigan, Dept. 204I, Chicago 5.

2 BEAUTIFUL HI-GLOSS prints each good negative and enlarging coupon with each 6 or 8 exposure roll developed 28c. Owlphoto Co., Weatherford, Okla.

8 BEAUTIFUL DOUBLE Size pictures and roll developed 30c. 8 hour service. Free Mailers. Pacific Photo Service, Box 666, San Francisco, Calif.

AUTOMOBILES—SPORTS CARS

"SPEED & POWER" Handbook—50 chapter Library Edition! Breathtaking methods—Authentic—Direct from California! Covers Fords to Cadillacs—all makes! Build your own Dual Manifolds! Superchargers! Hot Cams! Water Injectors! Hi-Compression Heads! Mileage Devices! Save many dollars! Get racing speed, lightning acceleration, dynamic power increases from any make automobile! Build fast Stock Cars! California Roadsters! 150 MPH Rods! Get construction drawings! Tuning Techniques! Speed Tricks! Picture Catalogues! Economy secrets! Ingenious formulas! Including—"Racing Frames"—"Reciprocating Masses"—"Jet Engines"—"Braking Characteristics"—"Dynamometers." Also—Dual Pipes—Gears—Fuels—Porting—Relieving—Lowering—Balancing! Includes "California Automobile Customizing"—Glossy photographs! Diagrams! Very newest ideas! Conversions! Re-styling all makes! Streamlining! Chopping! Channeling! Customizing!—Complete—$1.98 postpaid. Newhouse Automotive Industries, 5805-C2 East Beverly, Los Angeles 22.

"SPEED & MILEAGE" Manual!—140 illustrations! Most authoritative and widely read book of its kind! Easily gain up to 40% more speed, power, mileage, from any automobile! Complete instructions on building inexpensive s-p-e-e-d equipment! Fast Sports Cars! "California Hot Rods"! 155 M.P.H. conversions! Superchargers! Dual Manifolds! Twin Mufflers! "Water Injectors"! Heads! Economizers! All about fast engines—Speed Tuning—Restyling—"Customizing"—gas saving—"Racing Tricks"—Cams—Fuels—Ratios—"Stock Car Speed Secrets"! Latest California methods! "Custom Styling Information"! Streamlining! Sport Changes! Lowering! Working Diagrams! "Hollywood Roadster Plans"! Drawings! Charts! Photographs!—All Cars! Manual plus "Hot Rod Handbook" and Equipment Catalog—All three $1.98 (Satisfaction Guaranteed) Almquist Engineering, Milford 36, Penna.

"VAPO-STEAMATIC" WATER Injector. Easily built! Finest automatic "Moist-Humidity" system! Engineering triumph—Gets up to ten extra miles per gallon! Tremendously increases horsepower! Eliminates ping, carbon, overheating! Reduces wear—Lengthens engine life! Copyrighted "Water Injection Handbook"—with working drawings covering automobiles, motorcycles, airplanes, tractors! Includes Plans, Catalogues, Diagrams, Instructions—$1.00 complete. Newhouse Automotive Industries, 5805-C1 East Beverly, Los Angeles 22.

NEW CHEVROLET Speed Manual! Right off the press! Complete data on modifying 1937 thru 1949 engines for speed. How to install late engines in pre-1937 chassis. Full information and complete data on installing camshafts, dual or triple carburetion, superchargers, speed tuning, high compression, porting, ignition, etc. Answers all your questions on how to build fast Chevrolets. Illustrated with clear cut photographs and detailed drawings. We guarantee this to be the finest, most accurate, and most complete manual ever to be published for the Chevrolet. Sent postpaid for $2.00. California Bill, Box L-5, Eaglerock, Los Angeles 41, Calif.

"SPEED EQUIPMENT" Bargains! "California" Mufflers $4.50, V-8 Duals $15.90, Famous Racing Heads $45.00, Chrome Carb Stacks 98c, Echo Cans $1.65, Dual Manifolds, $9.95, OctaGane Water Injectors $17.50, Gas Savers $1.50, Lowering Kits $2.95. Many Others! Illustrated "Speed Catalog" 25c. Dealers Wanted. Almquist Engineering, Milford 36, Penna.

FORD OWNERS Handbook. Service information all 1932-1949 Models $1.50—Model "A" Handbook $1.00—Model "T" Handbook $1.50—Motor's Automobile Repair Manual $7.00—Motor's Flat Rate $7.50—Chevrolet Car & Truck Book 1930-1940 $3.50—Outboard Handbook $3.50—all Postpaid. Clymer, Dept. 10C, 1268 S. Alvarado, Los Angeles 6, Calif.

FORD OWNERS and Mechanics, we supply several simple replacement parts making Ford and Mercury brakes free floating, super powerful with soft pedal; eliminating squeal, chatter and groan—$4.25-$6.90. All models, 1928-1948. Easily installed by yourself. Write for details. Super Brake-Floater Company, 4022 West Lake Street, Chicago 24, Ill.

LIFE OF Ted Horn, American Automobile Racing Champion $2.00—Hot Rod Pictorial $1.50—How to Build Racing Automobile $2.00—Indianapolis Race History Book since 1909, 360 large pages, 1100 Illustrations $3.50—Power and Speed $2.50—Postpaid. Clymer, Dept. 10C, 1268 S. Alvarado, Los Angeles 6, Calif.

CLYMER'S STEAM Traction Engine & Threshing Machine Book $2.50—No. 5 Scrapbook Antique Cars $2.00—Steam Automobile Scrapbook $2.00—Motor History of America Book $3.00—Life of Henry Ford $3.00—All Postpaid. Clymer, Dept. 10C, 1268 S. Alvarado, Los Angeles 6, Calif.

NEW CATALOG every American Car. 120 photographs, specifications. All G-M, Ford, Chrysler and independents including Del Mar, Playboy, Gregory, Tucker, Davis, Keller. Compare all cars in one book. $2.00 Postpaid. Clymer, Dept. 10C, 1268 S. Alvarado, Los Angeles 6, Calif.

"HOLLYWOOD" DEEPTONE Mufflers. Powerful "straight-thru" design increases efficiency, speed, acceleration, mileage! Singles, all cars $4.85, V-8 Duals $15.90—(Satisfaction Guaranteed) Speed equipment catalog 25c. Dealers wanted. Almquist Engineering, Milford 36, Penna.

FROM SPEEDWAY to Roadway! Track-proved Hi-Speed Heads and Manifolds now available for your passenger car! No special tools needed! Increase horsepower 25%! Astounding Getaway! Free illustrated Catalog. Speedsport, 6215A-C Diversey, Chicago 39, Ill.

CUSTOM-RESTYLING, SUPER Handbook. Brand new! 200 graphic photographs, sketches, Medley cutaways. Thousands ideas. Guaranteed: Biggest, Best buyable! $2 pp, including catalog. Post Publications, Box 723-KX, Arcadia, Calif.

1949 INDIANAPOLIS RACE Yearbook. Just Out. Complete information, articles, photographs. Postpaid $1.50. Clymer, Dept. 10C, 1268 S. Alvarado, Los Angeles 6, Calif.

"HOT ROD" Handbook plus "California Speed Manual" and "Racing Equipment" Catalog—All three only $2.00. Speed Publications, Port Jervis 42, N. Y.

IMPELLER SUPERCHARGER — Increases power 20%. Tested, proven, blueprints $2.00. Corbcraft, 80 Maxwell, Rochester 11, N. Y.

"WATER INJECTION." Free descriptive, illustrated information. Neher Industries, La Verne 2, Calif.

CALIFORNIA SPEED Equipment. Custom Chrome Doll-'em-up Accessories, Skirts, Dual Single Hollywood Mufflers, Lowering Kits (new Fall catalog just out, 32 illustrated pages). Technical information 25c. Save freight cost. Midwest Warehouse. Von Esser's, 2840 N. Kedzie, Chicago 18, Ill.

ENJOY NEW-CAR pep and power in your old Buick. Same day service from World's largest stock of new (not rebuilt) Buick parts and engines. Ship anywhere. Write today. Robertson Buick Co., 1003 S. Wabash Ave., Chicago 5, Ill.

RACING CAR equipment for all cars, engines, racing heads, manifolds, carburetors, mufflers, etc. Speed instructions and literature $1.00—refunded first order. Lee Motorcraft Co., 1412-C Great Northern Bldg., Chicago 4, Ill.

AUTO PARTS. Buy direct. Get dealers' prices. Represent us in your territory. Write requirements. Specify car make. Mechanics Auto Parts, Factory Warehouse, 3807-MI N. Ashland, Chicago 13.

TILLOTSON CARBURETORS, parts, manuals. Wholesale and retail. Free list. Agencies available. 600 LaPrarie, Ferndale 20, Mich.

"OIL FACTS," The Motorists' Friend; a de-bunker and money saver. 32 pages, 10c. Re-Man-Co., 5087-D Elston Ave., Chicago 30.

SAVE GAS! Quicker Starting! "Airflow Needles." $1.50. Free Trial. Specify Car Carburetor. Neher Industries, La Verne 2, Calif.

MAKE YOURSELF Super Device, saves 45% gasoline guaranteed, purifies oil. Plans $2.00. Mike Brodie, Vilna, Alberta.

1949 SUPERIGNITIONITER STARTING-PEP-MILEAGE $4.50. 13 improvements 50c. Egg Mfgr., Elmford, N. Y.

VAPOR INJECTOR gives super performance, more power, smoother running, saves gas. See ad page 36.

"SMITHY MUFFLERS" for all cars. Free list. Buck's Auto Parts, 1625-T, Merced 5, Calif.

BUILD YOUR own Trailer! Save Money! Have every feature you want! Plans for House, Sport, Camp and Utility Trailers. Catalog describing 9 models 10c (15c in Canada and overseas). Jim Dandy, Box 125-C, Wausau, Wis.

TRAILER PLANS—house, utility, boat, etc. Axles, chassis, hitches, windows, etc. Catalog with booklet, "Trailer Hints," $1.00. Catalog only, 50c. Marine Mart, Buffalo 7-H, N. Y.

I BUILT 27 ft. housetrailer, so can you. My plan, pictures, source of material, $2.00. Jay Collins, 43 Leslie, East Orange, N. J.

MOTORCYCLE COVER: — Waterproof. Protects entire machine. Extremely durable nylon. Weighs under two pounds including carrying bag. Carried in less than one half saddlebag. $14.95 C.O.D. in U. S. State model and if equipped with windshield. Cycle Weather Pack Co., Box 1359, Church St. Station, New York, N. Y.

MIDGET CAR $5, motorbike conversions $5, brand new Regal motorscooters $37.50 less motors, Indian motorcycle $25, midget car $20, Custer motorscooter $25, all complete. Gasoline engines $2 up. Super-cycles, Cushmans, Salsburys. Plenty new motorscooters, midget cars, home-builders parts, automatic clutches, transmissions, engines, tires, etc., at factory prices. Special sale: Four balloon tires for $3. Over 5500 tires in stock. Mailorder only. Send 25c for Big War-Bargain catalogue just out listing these and hundreds of other bargains. (35c by First Class Mail.) Midget Motors Directory, Athens, Ohio.

CAMS FOR speed and acceleration. Harleys, Triumphs and Indian Vertical twins. $20.00 and $30.00. Write for information or send stock cams to David R. Bailey, Box 280, Denair, Calif.

RECONDITIONED MOTORCYCLES and motors. Chromium accessories. Complete stock Indian parts. Expert rebuilding. Fast Service. Indian Motorcycle Sales, Kansas City 1, Mo.

MOTORCYCLE NEWS—Monthly. Worldwide News. Abundantly Illustrated. Year's Subscription $1.00. Sample 15c. Motorcycle News, 5424-C Sawyer, Chicago 25.

MOTORSCOOTERS, NEW design, 6 big features, literature 10c. Rollaway Motors, Lancaster, N. H.

LEARN ELECTRICAL Appliance Repair. House wiring, motors, washers, cleaners, refrigerators, lamps, auto ignition etc., Complete illustrated course. Tools furnished. Free Booklet. Pacific School, 7217 South Broadway, Los Angeles 3.

BUY LAMP Parts Wholesale. Parts you need for building, repairing, or assembling. Save money on large or small orders. New catalog for 10c. Gearon Company, Dept. 300-C11, 27 South Desplaines, Chicago, Ill.

SMALL, POWERFUL, electric motor. Flashlight battery driven. For experimentors, inventors, hobbyists, etc. $1.50 postpaid. Lacey, 1742 Preston Ave., Akron 5, Ohio.

WIRING MATERIALS Complete postpaid for wall outlet $2.00, Bench $2.00, Ceiling $3.00 Underwriters Approved Stock. Wireman Lockbox #7, Fiskeville, Rhode Island.

ELECTRONIC DOOR Lock! Sensational! Invisible! Positive protection! Inexpensive! Tremendous profits! Free details! Aneswarth, 17544 Raymer, Northridge, Calif.

OIL LAMPS—Electrify them in ½ minute. Catalog all lamp parts and instructions 10c. Gyro Lamps, 5402M Clark, Chicago 40.

ELECTRIC PENCIL: Engraves all Metals $1.00. Beyer Mfg., 10511-G Springfield, Chicago 43.

WHOLESALE PRICES—Power Tools! Save 30% on standard, heavy-duty, guaranteed Bandsaw, Circle saw, Jointer, Sander, etc. Opportunity of a lifetime to completely "power-ize" your home or farm workshop at wholesale prices. Act fast! Send postcard for free information. Western-Standard Co., Dept. I, 3005 Hennepin Ave., Minneapolis 8, Minn.

CONCRETE MIXERS—New low prices, $49.00 up. Write for literature and price sheet. Muller Machinery Company, Inc., Dept. MI, Metuchen, N. J.

BENCH POWER tools, motors, supplies. Wholesale prices. Homecrafters Cooperative, Grand Rapids 6, Mich.

ELECTRIC TOOLS at greatly reduced prices. Catalog 10c. Betco, 619 North Broadway, Oklahoma City, Okla.

REAL DIAMOND pieces for tools. $1.00 apiece. Goldstein, 5609 N. Marvine, Philadelphia 41.

RADIATOR REPAIRING, cleaning, recoring. How to equip small shop at low cost. Supply sources, trade secrets. Instructions now only $3.50 postpaid. Radiator Service, McBain, Mich.

AUTO RADIATOR Repairing Supplies, equipment, books, gasoline torch. Write. John Curfman, Maryville, Mo.

WELDERS 110V. Welds ½" Steel $32.50. Morris Welding Service, 1850C State, Schenectady 4, N. Y.

INVENTORS: LEARN how to protect your invention. "Patent Guide" containing detailed information concerning patent protection and procedure together with "Record of Invention" form will be forwarded upon request—without obligation. We are registered to practice before the U. S. Patent Office and prepared to serve you in handling your patent matters. Clarence A. O'Brien & Harvey Jacobson, Registered Patent Attorneys, 93A-K District National Building, Washington, D. C.

INVENTORS—IF you have a valuable invention, the usual procedure is to authorize a preliminary search through appropriate classes of U. S. patents. This firm is registered to practice before the Patent Office,—is available to make such a search and report to you concerning the probable patentability of your invention. Booklet and convenient "Evidence of Invention" form sent upon request. Victor J. Evans & Co., 470-L Merlin Building, Washington 6, D. C.

IF AN inventor believes he has an invention, a search of the most pertinent prior U. S. Patents should be made and a report obtained relative to its patentability. Write for further particulars as to patent protection and procedure and "Invention Record" form at once. No obligation. McMorrow, Berman & Davidson, Registered Patent Attorneys, 1383 Victor Building, Washington 1, D. C.

COMPLETE SERVICES for inventors. Patent searches including analysis, patent copies. Patent applications prepared. Inventions marketed. Protection forms free. Industrial Patent Reports. Box 1081, Massachusetts Avenue and North Capitol, Washington 13, D. C.

INVENTORS: THE usual First Step is to have a search of the U. S. Patents conducted, so I can report on Patentability. Write, without obligation. Patrick D. Beavers (formerly Randolph & Beavers), Registered Patent Atty., 925 Columbian Bldg., Washington (1), D. C.

COPY OF your patent drawing enlarged, skillfully shaded to resemble retouched photo of product. Right for advertising, promotion. One view 8x10 limited time $10 with order. Van Dyke, 814 Wellington St., Cedar Rapids, Iowa.

PATENT SEARCHES $6.00. Includes patent copies. Free protection forms. Patent Service Institute, 945-G Pennsylvania Avenue, Washington 4, D. C.

INVENTORS: IF you have an invention for sale, patented or unpatented, write Institute of American Inventors, Dept. 50B, 1926 Eye St., N. W., Washington 6, D. C.

INVENTORS. FOR "Record of Invention" form, contact Carl Miller, Registered Patent Attorney, Woolworth Building, New York.

INVENTOR'S GUIDE free on request. F. A. Ledermann, Registered Patent Attorney, 154 Nassau St., New York 7, N. Y.

PROTECT, SELL inventions inexpensively. Markets. Guide $1.00. H. Gaw, 998 E. Main, El Cajon, Calif.

INVENTIONS FOR SALE

FAST SELLING farm product. Reasonable. John Smidt, Worthing, S. D.

INVENTIONS WANTED

INVENTORS: HUNDREDS of manufacturers have requested our assistance in locating marketable new products. Complete information, free. Institute of American Inventors, Dept. 50-C, 1926-Eye St., N. W., Washington 6, D. C.

CASH FOR your idea, 280 manufacturers need inventions, patented or unpatented. List free. Invention Bureau, 208-X Clinton, Oak Park, Ill.

HIGHEST ROYALTIES—Cash. Request free booklet "L." Universal Marketing Co., 354 South Spring St., Los Angeles 13, Calif.

INVENTIONS PROMOTED. Patented or Unpatented. Write Adam Fisher Company, 582 Enright, St. Louis, Mo.

INVENTIONS WANTED. Patented or Pending only. Inventors Exchange-C, Hartford 1, Conn.

MODELS & MODEL SUPPLIES

SHIP AND yacht model fittings; blueprints. Send 25c for illustrated catalog No. 24—listing hundreds of items. A. J. Fisher, 1002-B Etowah Ave., Royal Oak, Mich.

READY! OUR 1950 Catalog of Shipmodel Kits and Fittings; Sail, Steam, Diesel. Send 25c for catalog. Model Shipways Folio 70, 476 Main St., Fort Lee, N. J.

DOWMETAL MAGNESIUM for all model makers. Rod, Bar, Sheet and Scale Structural Shapes. The Craftsmiths, Box 3951, Detroit 27, Mich.

BUILD HISTORIC Ship Models, complete kits, 39c to $9.00. Catalog 10c. Ideal Models, 23 W. 18 St., N. Y. 11, N. Y.

MODEL PLANES—Ships. Send for free catalog. Buster's Hobby Shop, 166 Winthrop Ave., Revere 51, Mass.

STEAM ENGINES, boilers, castings. Catalog 25c, Anton Bohaboy, 2297 Price, Rahway 7, N. J.

MODEL RAILROAD SUPPLIES

TRACK CLEANER. For Lionel, Flyer, S-HO-O. 50c pair postpaid. Catalog 10c. Calrow, 593 N. Snelling, St. Paul 4, Minn.

RAILROADERS, 50c GETS new 1949 catalog reference manual. O or HO gauge. Walthers, 255 Erie, Milwaukee 2, Wis.

PATENT ATTORNEYS

INVENTORS: LEARN how to protect your invention. "Patent Guide" containing detailed information concerning patent protection and procedure together with "Record of Invention" form will be forwarded upon request—without obligation. We are registered to practice before the U. S. Patent Office and prepared to serve you in handling your patent matters. Clarence A. O'Brien & Harvey Jacobson, Registered Patent Attorneys, 93B-K District National Building, Washington, D. C.

INVENTORS: WHEN you are satisfied that you have invented something of value write me, without obligation, for information as to what steps you should take to secure a Patent. Write Patrick D. Beavers (Formerly Randolph & Beavers), Registered Patent Atty., 924 Columbian Bldg., Washington 1, D. C.

IF AN inventor believes he has an invention, a search of the most pertinent prior U. S. Patents should be made and a report obtained relative to its patentability. Write for further particulars as to patent protection and procedure and "Invention Record" form at once. No obligation. McMorrow, Berman & Davidson, Registered Patent Attorneys, 1384 Victor Building, Washington 1, D. C.

INVENTORS: WITHOUT obligation, write for information explaining the steps you should take to secure a Patent. John N. Randolph, Registered Patent Attorney, 210 Columbian Bldg., Washington 1, D. C.

PATENTS. "PROOF of Invention" folder mailed without obligation. E. E. Vrooman, Registered Patent Attorney, 510 McKim Building, Washington 5, D. C.

PATENTS—TRADE Marks. Gustave Miller. Registered Patent Attorney, 110-C Warner Building, Washington 4, D. C. Patent Lawyer.

INVENTORS. FOR "Record of Invention" form, contact Carl Miller, Registered Patent Attorney, Woolworth Building, New York.

C. A. SNOW & CO., 1-427 Snow Bldg., Washington 1, D. C. Registered patent attorneys. Literature mailed on request.

INVENTOR'S GUIDE free on request. Frank Ledermann, Registered Patent Attorney, 154 Nassau St., New York 7, N. Y.

PATENTS

IF AN inventor believes he has an invention, a search of the most pertinent prior U. S. Patents should be made and a report obtained relative to its patentability. Write for further particulars as to patent protection and procedure and "Invention Record" form at once. No obligation. McMorrow, Berman & Davidson, Registered Patent Attorneys, 1385 Victor Building, Washington 1, D. C.

INVENTORS: TEST the Commercial value of your patented or unpatented inventions, quickly and inexpensively. Write for free information. Institute of American Inventors, Dept. 50-A, 1926 Eye St., N. W., Washington 6, D. C.

INVENTIONS PROMOTED. Patented or Unpatented. Write Adam Fisher Company, 582 Enright, St. Louis, Mo.

PATENTS FOR SALE

PATENTED POSTAGE Stamp Holder for bill-folds and purses. Ideal for advertising. Alfred Gunning, 3001 Vintage, Houston 16, Tex.

ARCHERY

BOWS — ARROWS — Quality Archery Equipment. Popular prices. Catalog 10c. Illustrated Archery Instruction Book 50c. Archery, 617-P So. State, Chicago 5.

BLUEPRINTS & PLANS

BUILD AN Adobe House. Plans and elevations for the construction of a modern picture-window home built with stabilized adobe brick are now available. The overall dimensions of this ranch-style dwelling, excluding a separate garage and studio, are 64x37 ft. It contains two bedrooms, a kitchen, a living room (10x30 ft.), a dining room and a nine-foot wide porch that is 44 ft. long. A wood-burning fireplace features a storage bin for wood that's stacked from the outside of the house. Price for plans are $6.00 per set; additional sets are $3.00 when ordered at the same time. Send your money and request to Fawcett Publications, Greenwich, Conn. Please ask for Plan No. 50.

BOATS, OUTBOARD MOTORS

MARINE SPECIALTIES and motor conversions catalog. Sixty pages of struts, finishes, hardware, plexiglass windshield kits, electric tachometers, inboard and outboard air cooled motors, etc. Immediate delivery. Catalog with booklet, "Conversion Hints," $1.00. Catalog only, 50c. Marine Mart, Buffalo 7-H, N. Y.

FULL SIZE cut to shape patterns, blueprints, $3.75 up. Pleasure boats, to 38 feet. Illustrated "Build a Boat" catalog, 25c. "How to Build Boats" book $1.00. Polywog Houseboat Plans, $10. Marine Catalog $1.00. Cleveland Boat Blueprint Co., Dept A-23, Cleveland 13, Ohio.

PACKAGED LUMBER—Marine plywood, seasoned oak and cedar, sized, selected. Send $1.00 for booklet, "Plywood Boats," with quotation form and literature. Forms and literature, 25c. Marine Mart, Buffalo 7-H, N. Y.

BOAT MOTORS. Get our new list of factory rebuilt marine motors. Also ask for 48-page marine motor handbook. It's free. Universal Motor Company, 462 Universal Drive, Oshkosh, Wis.

STEERING WHEELS, windshield brackets, from $6.95. Modern fittings at lowest prices. Complete pre-cut plywood boats. Bargains galore. Folder 10c. Marine, Box 681, Mendota, Minn.

HIGH SPEED outboard motor tuning and Souping Up methods. Instructions $1.25. Excello Marine Sales, Post Office Box 71, Stratford, Conn.

MARINE CONVERSIONS for Ford and Jeep engines. Catalog 10c. Lehman Manufacturing Company, Department C, Newark 2, N. J.

BOAT BUILDERS' Guide—250 pages—15,000 items pictured, priced, deliverable. Send $1.00. MARINE MART, Buffalo 7-H, N. Y.

NEW, USED, rebuilt marine motors. Marine conversions, fittings. FREE catalog. Stokes Marine Supply, Dept. 21, Coldwater, Mich.

BUILD BETTER boats from better plans. Send for free Design Selection Form. Westlawn Associates, Montville 4, N. J.

P-38 BELLY TANKS $9.95. Ten foot. Unused, steel. Anzio Boat Company, 1649 "T", Merced, Calif.

KAYAK BLUEPRINTS, deluxe models—catalogue 10c. Viking Kayaks, Merrick, N. Y.

BUILD-IT-YOURSELF

JUST OFF the press—8-page folder illustrating 6 beautiful, popular lamps you can make—for yourself, for Xmas gifts, or to sell others. It's fun, highly profitable—as hobby, or part or full time basis. 8-page folder, 32-page parts catalog, wholesale price list only 25c—refundable first order. Gearon Company, Dept. 400-C11, 27 South Desplaines, Chicago 6, Ill.

GRANDFATHER CLOCK plan makes fine clock building fun—big savings—Dollar brings plans plus Westminster Chime weight movement brochure. Kuempel Clocks, Minneapolis 16.

BUILD BLOCK, brick, tile machine, sell 15 items—good profit. Build low cost home. Two blocks per minute—simple, inexpensive. Write U-Build-It, P.O. Box 7026, Tampa 3, Fla.

BUILD CIRCULATING electric heater, 3 heats, safe, efficient. Plans, Instructions $2.00. G. D. Smith, 4276 Rivard, Montreal, Canada.

BURGLAR ALARM Foolproof. Few parts needed. Send $1 for diagram. H. Attardo, 100-04 Spruce Ave., Corona, L. I.

MAKE BEAUTIFUL Colored Stone For Fireplaces, Homes. Sample $1.00. McLeod, 7620 Bingham, Dearborn, Mich.

DOLL FURNITURE, Locktogether Toys. No nails, screws or glue. 4 patterns $1.00. Wm. Longstreet, 1474 Newman, Lakewood 7, Ohio.

BUILD YOUR own "Tractor." Walking. Riding. Send postcard. Free information. Ellsworth Tractor Co., D-9, Camptonville, Calif.

"CONCRETE BLOCK Homes." 32 page booklet on how to build, $1.00. H. C. Lightfoot, Civil Engineer, Richboro 25, Penna.

BUILD INEXPENSIVE concrete block-maker. Motor or hand. Literature, 10c. Clyde Lee, Mountain View 9, Okla.

HOME CRAFTSMEN

GLASY-CAST, THE Liquid Plastic that works the quick and easy way. Cold-Set, 15 to 30 minutes for finished product. Free Samples and Instructions. Make embedments, novelties, plastic frames, machine parts, etc., for real profits. Two lbs. for $2.95. Elasto-Mold: Flexible production molds made in 20 minutes. Also finest quality Rubber Latex. Wholesale Prices. Plastic Service, 294 Washington St., Dept. P-4, Boston 8, Mass.

28 LAWN ORNAMENT patterns 25c. Other patterns: 15"-20" high; Dutch girl; Dutch boy, pirate, bull terrier, Mexican girl, Mexican boy, dwarf, penguin, flower girl, 10c each; 3 for 25c. 25 novelty patterns 30c. All 62 full size patterns $1.00 postpaid. Strother, Box 128-PG, Belington, W. Va.

NEW FLEXCRAFT flexible plastic ideal for home craftsman and small commercial shops. Coat and cast in brilliant colors. Make flexible molds. Introductory kits: Flexible Plastic $1.00; Flexible Mold $1.00. Free literature. RAD Laboratories, Dept. 1, Box 605, Lynbrook, N. Y.

LARGE PIECES All Wool Woven Felt for rubbing fine furniture with pumice and oil and for polishing. Send check or M.O. for $2.50. Specify thickness preferred. If you have other uses for felt please write, Henry M. Nagel, Box 125, Boulder, Colo.

MUSIC BOX Kit; Ready For Assembly And Decoration. Swiss Musical Movement, Instructions Included $3.95 Postpaid. Catalogue of Over 30 Crafts 25c. Refundable. Hobby Crafts, 1701 Macombs Road, New York 53, N. Y.

CAMEOS, CHAINS, Earwires, Crosses, Clasps, Moonstones, Pinbacks, Charms, others. Jewelry Kit $7.50 value only $2.95. Catalogue 10c. Refunded with order. Pickwick Findings, Box 780, Stamford 1, Conn.

SLIPPERY STEPS Made Safe. Basement, kitchen, wood, metal, concrete, any steps. Do it yourself. Easy. Tested materials, directions. $2.00. Barcanic, 7655-C Farragut, Chicago, Ill.

LEATHERCRAFT, COPPER tooling, textile painting. Materials, tools, supplies. Free illustrated catalog. Kit Kraft, Dept. CC11, 7377 Melrose, Los Angeles 46, Calif.

LAWN CHAIRS, garden figures, furniture, novelties, toys, etc. 68 popular plans with full size patterns, $1.00. Mastercraft 11X1, 7041 Olcott, Chicago 31, Ill.

CRAFT CATALOGUE free, Artcraft's "Little Giant." 6500 items covering several crafts. "Tops" in our field. Artcraft Leather, Oakland 7, Calif.

UPHOLSTER AT home. Book covers each step. Real photos. Simple instructions. Mail only $1.00. Upholstering Illustrated, Box 492, Peoria, Ill.

KNOCKDOWN CEDAR chest also lumber and veneers. Giles, Kendall Company, Brownsboro, Ala.

CATALOG—BOOKLET, Hobbycraft hints 10c. Leisure Hour Products, 416-18 Rose, West Hazleton 3, Penna.

JIGSAWED MONEYMAKERS Sells Itself: Plan 25c. Delaney, Box 56, Braintree 84, Mass.

MAKE SMOKING pipes, briar blocks and stems. Send for circular. Michelson & Sternberg, 23 West 47th Street, New York 19.

SPECIAL OFFER. 80 Full size toy, novelty, and lawn ornament patterns only $1.00 postpaid. Lynds, Box 193-F, Medway, Mass.

50 FULL SIZE, new 1949 novelty and lawn ornament patterns, up to 20" high, only $1.00. Pattern Service, Medway 5, Mass.

8 BEAUTIFUL FULL-SIZE Whatnot Patterns only 25c. Joaness, P. O. Box 141-C, Omaha 7, Nebr.

HAND-MADE NOVELTIES

MAKE YOUR own jewelry! All types of findings, plastic and metal; cameos, beads, shellkits, illustrated catalog 20c. Hobby Art, Dept. 2, P. O. B. 276, New York 18, N. Y.

PLASTICS

LEARN TO carve flowers, etc., in clear Plexiglas, make pen stands, boxes, lamps, many other popular gift items. New complete instruction manual, material catalog, $1.50 postpaid. Plastic's, Box 1415, Salt Lake City 11, Utah.

LUCITE, PLEXIGLAS. Any size sheets, masked. Square foot (12x12) cost, 1/16, 96c; 1/8, $1.25; 3/16, $1.52; 1/4, $1.80. Colors add 10%. Include 10% postage. Almac Plastics, 230 Fifth Ave., New York 1, N. Y.

LUMINOUS PLASTIC House Numbers, Attractive Glow, Practical, Durable, Plus Extra Useful Gift. Postpaid $1.00. Bob's Luminescent Shop, 317 East "A," Ontario, Calif.

PLASTIC BAR Bender. Sets on stove. Forms angles, twists, adjustable. Capacity 1/4x8, $1.00. Wide pliers: 2½", $2.00; 5", $3.00. Home Industries, Omaha 5. Neb.

INTERNAL CARVED roses, orchids, swans, goldfish, butterflies, etc. Jewelry and gifts. Crystal Floral Novelty Co., Bound Brook, N. J.

PLASTICS, DYES, findings. Ceramic supplies. Catalog. Hobby Supply House, P.O. Box 604, Los Angeles 25, Calif.

PLASTIC, SHEETS, rods, tubes, etc. Free list. Plastic Supply Co., 2901 N. Grand Blvd., St. Louis 7, Mo.

CAMEOS, RHINESTONES, Sequins, Beads, Craft Kits, Jewelry Findings, Free Catalog. J. & M. Novelties, Box 464-M, Griffith, Ind.

SPORTING GOODS, FISHING TACKLE, GUNS

SPORTSMEN! SEND for big money-saving catalog; guns; sporting goods. Enclose 10c. Woodland Sports, Woodland Hills 3, Calif.

AMMUNITION PRICES Slashed. American and foreign loads below retail. Dime for list. Central Sports, Delphos 14, Ohio.

5000 BARGAINS, FIREARMS, binoculars, war relics. Catalog 40c. Smith Armory, Runnemede, N. J.

SEND 10c FOR list 100 used guns. Frayseth's, Willmar, Minn.

FIELDGLASSES, TELESCOPES, MICROSCOPES, ETC.

TERRIFIC BARGAINS—Government Surplus Telescopes, Binoculars. Send $1.00 for 10 piece Hobbyist Lens Set. Contains magnifying and reducing lenses. Send stamp for Bargain list. R. Jaegers, 93-08 95th Ave., Ozone Park 16, N. Y.

DON'T INVEST in binoculars until you read our 14-page booklet and catalog, both free. Write today! Bushnell Importers, 43-U East Green, Pasadena 1, Calif.

TELESCOPE PLANS are available for building MI's Six-Inch Portable Reflecting Telescope. A superb astronomical instrument that will reveal the moons of Jupiter, the rings of Saturn and the polar caps of Mars. With it, you can read a newspaper headline at a mile. The plans are complete with photographs, drawings and detailed text. If you can fix a leaking faucet, you can build this telescope. Send your request and remittance of $2.00 to MI Reader Plan Service, 10 Fawcett Place, Greenwich, Conn. Please ask for Plan P-6.

OPTICAL INSTRUMENT Repair Co. Binoculars, Fieldglasses, Telescopes, Microscopes repaired, Optics hardcoated, Post or Cross Hairs installed, Refinishing, Blueing. Write or send instrument for estimate. Prompt service. Workmanship guaranteed. 579 Avondale, San Antonio 10, Tex.

WAR SURPLUS Bargains, Binoculars, Telescopes, Sextants, Millions of Lenses, Prisms, Reticles, Eyepieces, Objectives, etc. Request Free "Catalog CB." Send $1.00 for Stock CB—10-Piece Lens Kit and Big Instruction Booklet. Edmund Salvage Co., Barrington, N. J.

REFLECTING TELESCOPES, 60X completely assembled $25.00. Guaranteed observatory clearness. Free information. Skyscope, 475 Fifth Avenue, New York 17.

ASTRONOMICAL TELESCOPES, binoculars, microscopes; bought, sold, repaired. Books. Lists 10c. Rasmussen-Reece, Amsterdam, N. Y.

TELESCOPES, BINOCULARS, Microscopes—big bargain catalog free. Brownscope Company, 24 West 45th Street, New York.

RONCHI TEST Gratings. Precision made for fast, accurate testing. $2.25. S. G. Bushman, 177 Wolfe Ave., Mansfield, Ohio.

DOGS, SMALL ANIMALS, OTHER PETS

HOBBY CATALOG 10c. Reptile Bulletin 5c. Hamsters $2.75 pair. Mice $3.50 dozen. Chameleon 35c. Alligator $2.50. Quibira Specialties, Topeka, Kans.

HAMSTER MANUAL, complete hamster raising information, many pictures. One dollar postpaid. Thiele Enterprizes, Columbia, Ill.

BEAUTIFUL GOLDEN Great Danes—Companion, Guard. Sidney Baucom, 36 W. 1st N., Salt Lake City, Utah.

SEE GOLDEN Hamsters ad on page 22. Shows picture of Hamster.

DAIRY GOATS

CASH FROM spare time! Raise Dairy Goats. Magazine tells how. Send for Free copy. Dairy Goat Journal, Columbia 26A, Mo.

HORSE TRAINING

"HOW TO Break And Train Horses"—A book every farmer and horseman should have. It is free, no obligation. Simply address, Beery School of Horsemanship, Dept. 1151IC, Pleasant Hill, Ohio.

RABBITS

MAKE MONEY! Raise Chinchilla Rabbits. Experience unnecessary. Valuable Breeders. Extra profits from meat, furs, laboratories. Pleasant hobby. Write today! Willow Farm, Sellersville 48, Penna.

RABBITS. FOR tasty food and profits, write for information and Free illustrated booklet. Dr. Frank Baddour, Lebanon 7, Tenn.

$400.00 MONTHLY, RAISING Angora Rabbits. Particulars free. White's Rabbitry, Newark, Ohio.

RAISE GUINEA Pigs. Make extra money. Booklet free. Taylor, Box 426E, Hapeville, Ga.

$50 WEEKLY OUR plan raising Angora rabbits. Wilson, Stanton 13, Calif.

REAL ESTATE, FARM LANDS

FARMS, RANCHES, lodges, resorts. Big selection. Milwaukee Road territory, Washington, Idaho, Montana, Dakotas, Minnesota, Iowa, Missouri, Michigan, Wisconsin, Illinois, Indiana. Free colorful descriptive folders, price list. L. H. Robbins, 738T Union Station, Chicago 6, Ill.

FLORIDA CAMPSITES—$75.00 at $5.00 monthly buys nice, high dry lot in Lake County (world's best bass fishing) near Ocala National Forest, St. Johns River, beautiful lakes, pavement, electricity. Safe from bombs. Folder free. Winston Vernor, DeLand, Fla.

SOLD FOR Taxes. Calif., Oregon, Washington timber, grazing, ranch & Mining lands. 25c to $3 acre min. bid. 10c (coin) brings circulars, photos, maps. Pacific Lands. Box 2350-MI, Hollywood, Calif.

OZARK HOMESEEKERS Magazine, Eureka Springs 13, Ark. Opportunities and information. Year, $1.50.

PERSONAL

"HOW CAN I Find Out?" You can! Information discreetly developed. Any matter, person, problem, anywhere. Worldwide. Officially licensed, bonded service. Established 1922. Reasonable. Confidential. William Herman, 170 Broadway, New York.

STOP NOISE 90%! Sleep soundly with Sleep-Rite Waxen Earstoppers. Users say—"Wonderful"—"Great." Set 10c. Guaranteed. Raymond Dow, 2922—164th, Flushing 40, N. Y.

FOOT SUFFERERS get instant relief from a pair of soft sponge rubber arch supports. Price $1.00. Free information. Cadwallader, 311-A Crosby Bldg., Buffalo 2, N. Y.

TELL THEM you've been in New York. Letters re-mailed 25c (coin). J. Robinson, Box 208, Cathedral Station, N. Y. C. 25.

BUY BEST English Suitings Direct. Send for Free Patterns. Mullen, 117 Watchfield, Chiswick, London, England.

"INTERESTING MAILS"—25c keeps your mail box full three months. Bentz, Jr., Desk-A/31, Chatawa, Miss.

MEN SEND $2.00 for 4 new ties that are worth $6.00. Lowell G. Hartman, Box 182, Nappanee, Ind.

LETTERS REMAILED 25c, cards 10c. You're notified. Universal, Box 1866, Seattle 11, Wash.

JEWELRY

JEWELRY, FINDINGS and Supplies, newest styles. Instructive illustrated catalog 10c. Doremby Co., Chisholm 1, Me.

JEWELRY SUPPLIES Wholesale, Literature 10c. Myles-Herber, 1360-B Hicks, New York 67.

JEWELRY MAKING. Illustrated catalog 20c. George Sassen, 35 Maiden Lane, N. Y. C. 7

RHINESTONE JEWELRY supplies. Free catalog. Wrights, Box 104-M, Erie, Pa.

MINERALS—PRECIOUS STONES

URANIUM EXPLORATION, detection, recognition methods understandably explained. Particulars free. Woodwid Industries, 5217-C Hollywood Boulevard, Hollywood 27, California.

CEYLON TOPAZ, baguettes, about 6 carats $6.00; 10 carat size $8.50; largest size $10.00. Rush, limited quantity. C.O.D. accepted, $1.00 deposit. Huse, Armonk, N. Y.

GEMS—SELECTED, accurately sawed sections, ready to grind. $5.00 dozen. Small slabs 3 for $1.00. Prompt refund if not well pleased. Bristow's, 655 S. Yale, Wichita 9, Kans.

ZIRCONS, DIAMOND-LIKE white, blue, or golden, carat Gem plus 2 sparkling Zircon side stones $3.85. C. O. D.'s accepted, $1.00 deposit. Imhusex, Armonk, N. Y. Agents wanted.

GEMSTONES, MINERAL Specimens. Every variety. Lowest prices. Postcard brings free list. Plummer, 2177A Bacon, San Diego 7, Calif.

URANIUM PROSPECTOR'S Handbook $1. Craft Publications, Dept. Z, 601 S. Vermont, Los Angeles 5, Calif.

MISCELLANEOUS

PANNING GOLD—New Book—"What The Beginner Needs To Know"—36 pages, Panning Lesson, also catalogue of beginners supplies, mining books, maps of where to go. Mailed postpaid for 25c. Coin or stamps. Old Prospector, 8321, Dutch Flat, Calif.

TREASURE LOCATORS, Mineral Detectors. Geiger Counters for Uranium ores. Free literature. Fisher Research Laboratory, Inc., Palo Alto, Calif.

NEW CO_2 (Carbon-Dioxide) Fire Extinguishers, Underwriters Approved—20% Discount. Write Fesco, 206 Division St., Pawtucket, R. I.

GEIGER COUNTERS! New 5 lb. ultra sensitive uranium detector complete with meter, headset and count indicator. Sensational low price! Guaranteed. Detectron Company, 5637 Cahuenga Blvd., North Hollywood, Calif.

DETECTIVES OPPORTUNITIES. Experience unnecessary. Detective particulars free. Write, Wagoner, J-125 West 86th St., New York 24.

TREASURE FINDERS! Goldak offers metal and mineral locators at new low prices. Write Goldak Co., 1546 West Glenoaks, Glendale 1, Calif.

RECEIVE GIGANTIC mails, listing 10c, three months 25c, twelve months 50c. Waddell's Directory 341-D East 76th, New York 21.

SEEK BURIED Treasure. Methods, mysteries, devices explained. Circulars free. Century Press, Box 151-F, Glen Ellyn, Ill.

GEIGER COUNTERS for locating Uranium; Metal Detectors for Gold, Silver and minerals. Free information. Detectron Company, 5637 Cahuenga Blvd., North Hollywood, Calif.

NON-BENDING Candles—For free circular write Rebecca Francis, D-B, 104 W. Second Ave., Gastonia, N. C.

DRESSES 18c; MEN'S Overcoats $1.00; Skirts 50c. Free Catalog. Crown, 164-ML Monroe St., New York 2.

SQUARE DANCE instructions. Calls, 25 sets, $1.00. Rayburn, Eureka Springs 13, Ark.

FREE CIRCULAR on lost gold mines. Write Wyss, 1041½ Francis, St. Joseph, Mo.

OLD GOLD WANTED

HIGHEST CASH for old, broken jewelry, gold teeth, watches, silverware, diamonds, spectacles. Free information. Satisfaction guaranteed. Government licensed. Rose Smelting Company, 29-K East Madison, Chicago.

WANTED BROKEN jewelry, all kinds watches, rings, gold teeth, silverware, platinum. Satisfaction or articles returned. A. Pojeskey, Mt. Carmel, Pa.

WATCHES, WATCHMAKING, ETC.

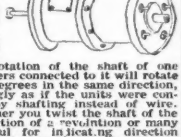
NEW AND rebuilt watches, all makes, styles, $9.95 up; guaranteed. Brookins, B-1975DL, Little Rock, Ark.

WATCHMAKERS TOOLS. Supplies. Sold—Bought. Catalogue! Bengall Company, Culver City, Calif.

SUPER SPECIAL

POWER UNITS for Fairchild bombsights. A limited quantity of these arrived too late for a photo, but each unit is brand new, includes 8 electric motors or generators, 6 of which are of the permanent magnet field type; relays; 20 precision resistors plus numerous others of the ordinary kind; and 9 tubes which alone have a total value of $15.00. All for only **$14.95.**

$12.95 TAKES ALL THREE BIG BARGAINS



1. SENSATIONAL, FASCINATING, MYSTERIOUS SELSYNS. Brand new Selsyns made by G. E. Company. Two or more connected together work perfectly on 110V AC. Any rotation of the shaft of one Selsyn and all others connected to it will rotate exactly as many degrees in the same direction, following unerringly as if the units were connected together by shafting instead of wire. This is true whether you twist the shaft of the master unit a fraction of a revolution or many revolutions. Useful for indicating direction of weather vanes, rotating directional antennas, or controlling innumerable operations from a distance. Complete with diagram and instructions. Per Matched pair **$4.95. 2. ALUMINUM GEAR BOX** 18x8x7 that contains two powerful electric motors and two matched gear trains, 62 gears in all varying in size from 1½ to 4 inches in diameter. This unit is readily converted to rotate a television antenna or for any other similar use. **$5.00. 3. HOME WORKSHOP AT BARGAIN PRICE.** Accurate and precise 2 speed guaranteed hobby lathe, the essential machine for the home workshop. Sturdy enough for light production work or factory standby service. Supplied with 56" of belting for connecting to any available electric motor or power take-off, such as on a jeep or tractor. Also included in this unbelievable offer are such accessories as a ½" drill chuck with specially hardened tool steel jaws, a 4" electric furnace high speed grinding wheel, a cotton buffing wheel with a large supply of buffing compound, and a 4" steel wire scratch brush. Your cost **$6.00.** Sole export agent. Distributor inquiries invited.

COMPRESSED AIR ANYWHERE

Portable Air Compressor and Storage Tank. Ruggedly built, best Materials. Lifetime lubricated ball-bearing on connecting rod and oil impregnated main bearing on shaft. Unusual design forever eliminates valve trouble, the most common fault in air compressors.

PATENTED unique air intake system increases efficiency tremendously so that air output is much greater than that from larger compressors powered by heavier motors. Will deliver approximately 3500 cu. inches of air per minute at maintained pressure of 30 lbs., or will inflate a 90 lb. truck tire in less than one minute. Complete with 100 gauge. Finger-tip adjustment allows setting of output pressure at any value, which will automatically be maintained. Works from any ¼ H. P. motor. Useful for spraying paint, lacquer, disinfectant, insecticide, annealing or brazing with natural gas, inflating tires, etc. Price **$14.50** postage prepaid anywhere in the U. S. Efficient, completely adjustable syphon hosespray gun complete with 12 ft. of 100 lb. tested hose, only **$7.75** with pint container, also prepaid.

SOCKETS: Bayonet type radio pilot light sockets for model railroad enthusiasts, etc. **$5.00** a hundred. Bulbs, per 10, 50c.

Sensational Value in AC-DC POCKET TESTER

This analyzer, featuring a sensitive repulsion type meter housed in a bakelite case, represents the culmination of 15 years achievement in the instrument field by a large company specializing in electronic test equipment.

Specifications of the AC-DC Model Volt-Ohmmilliammeter:

AC Volts—0-25, 50, 125,250
DC Volts—0-25, 50, 125,250
Milliamperes AC—0 to 50
DC Milliamperes—0 to 50
Ohms Full Scale—100,000
Ohms Center Scale—2400
Capacity—.05 to 15 Mfd.

Total Price, prepaid anywhere in the USA—**$7.00.** Similar DC Meter, lacking the AC operated ranges of above, **$5.50** prepaid.

"SO" RADAR SET

"SO" RADAR RECEIVER, complete with 9 tubes including picture tube. This plan—Position—Indicator Oscilloscope has a self-contained pack designed to run from the 110 V. power supply on LST or PT boats. It provides a 5" diameter picture adjustable at will to an 80, 40, 4 or 2 mile circle with the boat at the center, showing location of land, other ships, or any obstruction, so that navigation can be carried out in pitch darkness or densest fog with as much safety as in brightest sunlight. Your cost **$39.95.**

All sales final and no returns unless otherwise specified in ad of item. Right reserved to change prices & specifications at any time. Cable address BUFRAD

BUFFALO RADIO SUPPLY 221 Genesee St., Dept. MI, BUFFALO 3, N. Y.

of these sturdy, dependable

Low-Cost Marlin .22's

TUBULAR MAGAZINE
18-25 shots on one loading
$28.90*
**Price slightly higher west of the Rockies.*

MARLIN MODEL 81-DL

Shooting efficiency, with *least* fuss and bother! Magazine holds a load for a full day's hunting. Patented non-jamming feed. Shoots .22 short, long and long rifle cartridges—regular and high speed without adjustment. Quick-release trigger—self-cocking action—side ejection—Off and On safety—American walnut stock. Available with peep sight or open sights; sling strap swivels.

Unbeatable for pests and vermin...owls, rats, hawks and crows, the 81-DL carries up to 25 shots.

CLIP MAGAZINE
for rapid fire
$24.15*
**Price slightly higher west of the Rockies.*

MARLIN MODEL 80-DL

Whale of a value—this man-sized .22 repeater! Ready for instant action on vermin or small game. 8 rapid-fire shots to get 'em, no matter how fast they run. Quick-release trigger—self-cocking action—side ejection—Off and On safety—American walnut stock. Available with peep sight or open sights; sling strap swivels. More sport for your money with Marlin's 80-DL!

Marlin's 80-DL is a sure getter of woodchuck, raccoons, rabbits and other fur-bearing game.

THE MARLIN FIREARMS CO. · NEW HAVEN, CONN.

Marlin Guns

SEND TODAY for new illustrated catalog* with complete specifications! Enclose 10¢ to cover postage and handling. Mail coupon to Marlin, Dept. 9, New Haven, Conn.

*Sample pack of Marlin Blades included, with our compliments

Name .....

Address .....

.....

mechanix illustrated
November 1949

ROCHESTER, N.Y., IS *Calling All Inventors*

Harold S. Rand, Deputy Commissioner of Commerce, sets spines of gadgeteers tingling with plea for new inventions.

Got a Better Mouse Trap?

If you have

Rochester Wants It

Rochester industries are looking for new patents.

Rochester wholesalers and jobbers are seeking new products.

The City of Rochester offers you, gratis, direct contact with interested manufacturers and with qualified distributors.

For further information, write to the Division of Public Relations, Rochester Department of Commerce, 54 Court St., Rochester 4, New York.

Got a new gadget? Rochester's industries want to see it. They may even make it and market it for you.

By Alfred Eris

THERE'S a man in Rochester, N. Y., whose job it is to help you make a million dollars! His name is Harold S. Rand and he's the Deputy Commissioner of Commerce for that city.

What's the catch? Naturally, there's a reason for it—but it's certainly not a hidden reason. It's simply part of a scheme to keep

Here's the better mouse trap that Rochester wanted. It's electronic, no less. Mouse enters at lower left, doors shut, it "escapes" through passageway and walks right into hot seat. And to add insult to injury, corpse is sprayed for fleas.

Wallet guard is another Rochester invention. It's simply a metal frame with two claws. When attached to your wallet, the claws grip the lining of your pocket. If a "dip" tries to lift your wallet, he'll have to take you along, too.

Rochester's industries going at capacity.

It all began back in 1946. Rochester's big factories were still operating at wartime peak but the manufacturers were worried. What was going to happen when government contracts ended? Rochester had always specialized in precision manufacturing and would not be able to meet the demand for consumer goods. How were firms like Eastman Kodak, Graflex, Bausch and Lomb and Stromberg Carlson going to keep their expanded labs and factories going?

Someone suggested that inventors throughout America had been working like beavers during the war years on millions of pet projects. The war had prevented the manufacture of these nonessential gadgets. Now was the time to ferret them out and go to work on them!

The project was assigned to Harold S. Rand. He worked out ads and began a newspaper, magazine and radio campaign which set the spines of inventors tingling with anticipation.

"Got a better mousetrap? If you have, Rochester wants it." That was the gist of Rand's appeal to all inventors. And soon, postmen's shoulders sagged at the mere mention of the Department of Commerce. Inventors from all 48 states, from Hong Kong, Israel, the Philippines, Puerto Rico and India sent in countless suggestions.

A Canadian had an idea for a cheap helicopter. A Chinese inventor sent in an excellent suggestion for a television gimmick. Another gadgeteer in Mexico had an idea for a new lunch kit. (It was beautifully designed but too expensive to produce.)

Even Mother Necessity helped out. One inventor had his pocket picked by an expert "dip." Boiling mad, he devised a simple metal frame, with two adjustable claws, which slips into any wallet. You separate the claws and hook them lightly into your pants pocket. Anybody who tries to lift your wallet then will have to take the pocket, suit and *you* along with it! That gimmick is now being offered to wallet manufacturers and may soon be part of many standard wallets on the market.

Frank B. Sweeney, another inventor, developed an automatic throttle control for carburetors—mainly because he suffered nervous strain during a long auto trip. Mr. Sweeney's foot worked all day on the accelerator and by the time he reached his hotel he had a mental picture of a gimmick which would adjust the carburetor opening to the engine's power demand and give his foot a rest. Dynaflite, Inc., is selling the latest model of this gadget and Detroit is studying its possibilities for use in its cars.

Rand, himself, is partly responsible for one new product which will soon be in millions of American homes. He happened to drop in on Garson Meyer, an Eastman Kodak executive, one day. Meyer was fiddling about with an oversized telephone dial which he was building for his aged mother. Rand saw its possibilities immediately and hounded Meyer until the gimmick was patented. Now, it's being manufactured by a telephone firm and soon will be available for blind and aged people

who have trouble dialing regular phones.

A nurse and a traffic control director were discussing fishing one day. Why not use the beaded material laid in strips on roadsigns to reflect light on fish lures, she asked? The result is a fast-selling lure sold by Flectolite, Inc.

Success stories like these have gotten to be commonplace in Rochester. Harold Griffin is a local citizen who heard the call for new inventions and went to work in his basement workshop. He developed a pen-like holder for knives. Today, the Griffin Manufacturing Company employs five persons and its holders for crayons and drawing leads are sold throughout the country.

Another Rochester man, Paul A. MacInnes, scored a spectacular success where some of the largest labs in America failed. After two years of hard work, MacInnes developed a long sought after carbide tool for cutting glass. Today, he makes seven types of tungsten carbide-tipped wheels for some of the greatest companies in the glass industry. One of his tiny wheels cuts from 8000 to 10,000 windshields without being removed from the machine.

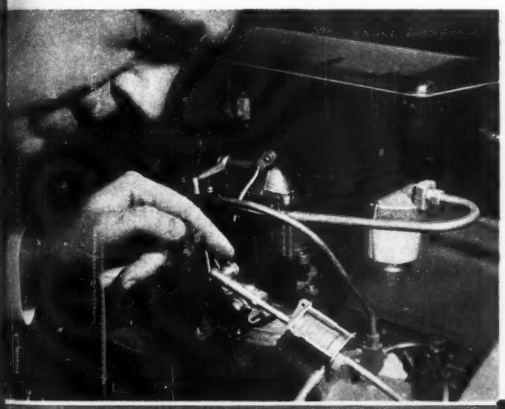
And speaking of better mousetraps, Rochester has probably found the world's best. Electronic Traps, Inc., is now selling one which was invented by two telephone company engineers in answer to an SOS from a hotel manager. Working evenings and weekends, the men made more than 80 models over a period of four years. Finally, they came up with a model which has killed 79 rats in a single night's operation.

Here's how it works. The trap is wheeled next to a wall and left to do its work automatically. When a rat runs underneath, it trips a photo-electric cell beam which brings down the trap doors. A light flashes on, disclosing a small open door. Mr. Rat runs for it and then finds himself in the hot seat. Minutes later, his body is thrown out of this electrocution chamber and the apparatus is automatically reset for the next unsuspecting victim. Besides photo-electric cells, the trap has special timers and other precision devices.

To perfect it even further, a new model is being built with a spray device to kill the rat's fleas as well. While Brother Rat's on the hot seat, another timer operates a mechanism which releases a jet spray of insecticide on the corpse.

Another device which will soon be commonplace in America is the Meterad, an invention of two employees of the N. Y. State Department of Labor. These men visualized parking meters as not just mechanical monsters that devour nickels. They saw them as ideal advertising media. They came up with a cast aluminum frame for advertising material which fits on most U. S. parking meters. Meterad space is now being sold through advertising agencies and will be serviced and installed only by the manufacturers.

But do large firms like Eastman Kodak really care a hoot about your invention—or do they use only their own developments? Rand answers that query this way: "The greatest firms in Rochester have asked us to keep them in mind. They invariably say that they don't care how often I call them as long as I have something new. They're always interested in what I



Inventor Frank B. Sweeney looks over his automatic throttle which has aroused much interest in Detroit. It's a gadget which adjusts the carburetor opening to the engine's power demand, thus giving the driver's foot a rest.

This "Farmer's Friend" is just as much a friend of the farmer's wife. The Stromberg Carlson hook-switch does away with telltale clicks on party lines. Weather and fire reports can be given to all parties at one time, too.

Air pistol, marketed by Crosman Arms Co., uses a refill cylinder of carbon dioxide. It's then good for from 400 to 1200 shots, depending upon the power used.

have to offer them for production."

However, don't get the idea that all inventions sent in are immediately okayed and put into production. The percentage of ideas accepted boils down to a very low figure. Even if as many as ten per cent are worth considering, only about one per cent ever see daylight as finished products for sale on the open market.

Sometimes, inventors from widely separated parts of the country send in the same idea. They are usually incredulous when this is pointed out to them. So, if you're thinking of a new type of sugar dispenser or mulling over a salt-and-pepper shaker that whistles Dixie, better forget about it. So many designs have been received for these types of gadgets that the Department of Commerce has begun to send them right back without submission to the industrialists. However, anything really novel receives thorough consideration.

At times, though, negotiations with inventors have broken down because the inventor showed a complete lack of sympathy for the manufacturer's problems. The small manufacturer, considering a new item, must wateh his costs carefully to avoid a fatal plunge into bankruptcy. Most of them are gambling on a 100-1 shot—a best selling gadget which will capture the vast American market. But, most of the time they plod along on an entirely different basis.

It's called the one-shot setup and it works this way. A manufacturer tries to mass produce quickly and capture the market with a new item as rapidly as possible. Inevitably, his competition is going to come up with a lower-priced duplicate, thereby cutting away his market. So, he has to hurry.

Sometimes, the inventor doesn't realize this situation and considers 100,000 produced as 100,000 sold. That, of course, is not the case. And if the manufacturer tries to bring down costs by simplifying some feature of the gimmick, the inventor often shrieks "Murder!" More than one invention has never even reached the market because of the inventor's refusal to allow production-line changes.

Few women suggest gadgets, but a great number of retired mechanics flood Rand's office with suggestions. Usually, they say: "I've been thinking about this idea for years but somehow I never found the time to work it out. Since I retired, etc. . . ." Although most of the gadget ideas have come from mechanics, machinists and other industrial employees, Harold Rand is convinced that 99 per cent of the American people have an inventive streak in them.

"Why, I can't spend an evening out," he explains, "without meeting at least one person who has a new idea up his sleeve. Even a staid executive whom you'd never suspect of being a gadgeteer *just happens* to have blueprints for a new gimmick carefully tucked away in his desk."

Even though Rochester's search for new inventions is now at its peak, "Calling all inventors" is a cry you'll still be hearing often during the coming months. Won't the market dry up? Emphatically no, is the reply of Rochester industrialists. Every manufacturer there feels he must keep up with the newest developments. "It's the fellows with new products who will succeed," says Rand. "I can't see any prospect of a letup in the demand for inventions."

So, if you've got a gadget, tool or invention which you think is needed, all you have to do is drop Rand a line, telling about it. Write to: *Harold S. Rand, Department of Commerce, 54 Court Street, Rochester 4, New York.*

Rand will answer you promptly and let you know if the gimmick you describe has potentialities for Rochester. If it does, he'll put you in direct contact with interested manufacturers. If they feel your gadget is

"it" they'll make it and market it all over the world.

The service costs you nothing at all. And you have the added satisfaction of knowing that your pet idea will be manufactured, by some of America's best machinists, men who have already established a fine record for Rochester's industries.

Rochester boosted its business, too, when manufacturers in other parts of the country heard about the city's quest for inventions. They wrote in to ask if local factories could handle sub-contract work of a precision nature and Rand's answer was yes. This brought in about $3 million worth of work annually. Also, cities like Nashville, Tenn., Worcester, Mass., and Sidney, Mont., are considering launching Rochester Plans of their own.

If you still don't believe that the Rochester plan has really been a success, just watch your local markets. Rochester's highly skilled technicians will be sending a host of new inventions your way within the year. For instance, Bausch and Lomb will soon put their Allen Goniscope on the market. It's a tiny device for studying eye diseases, particularly glaucoma. They'll also market the first variable-power telescopic rifle sights ever made there. The Doyle Company is coming up with two gimmicks for bowling enthusiasts. One is an electronic foul detector for overenthusiastic bowlers and the other is an electric pin-spotter which will cut down low-scoring difficulties. It should also cut down low-scoring excuses, say company officials.

Then, there's the Rapidata Corporation which is introducing a new card-punch machine and a sorting machine, both mere fractions of the size of the apparatus now in use. Leblanc Manufacturing is making a cheese cutter. And, to prove its diverse talents, it's also manufacturing a dustrap filter for hot air furnaces. Talk-O-Products has an intercom system which is always ready for use, requires no warmup and permits private calls to any of the system's intercommunicating stations.

Rand says that Bilkar Products, another Rochester manufacturer, has a new baby's bib with a wide pocket held open permanently by a harmless spring device. If baby doesn't have perfect after-dinner manners, it really won't matter because the "kangaroo pocket" will catch everything.

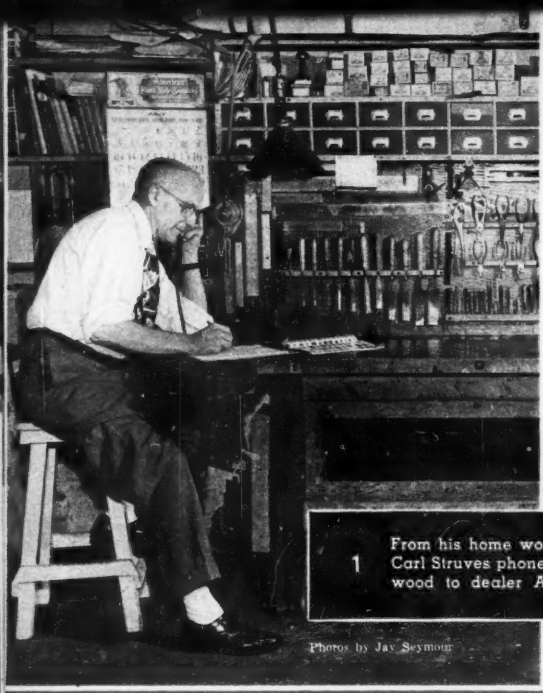
Stromberg Carlson's Telephone and Switchboard Division has come up with a gadget that'll be a real boon to the farmer—and the farmer's wife. It's a two-step hook-switch for party lines. You can now listen in on all sorts of private conversations without causing a telltale click. The operator can signal "Fire" by ringing the proper bell and all parties on the line can listen at the same time for specific location and directions.

Another Rochester firm, Chieftain Products, has a line of automotive scissor jacks with capacities up to three tons. Crosman Arms Company is introducing a new type of air pistol which depends on a refill cylinder of carbon dioxide for its power.

Then, there's Royal Rochester which plans to feature a new portable electric cocktail mixer. Obviously, there's no crying need for a gimmick such as this, but it's all part of the Rochester plan to produce gadgets which make work easier and life pleasanter.

So, if you've got an idea for a cocktail mixer that'll produce pitless olives in its martinis, don't hesitate to send it on to Rand. Whether your gadget is a luxury item or something you consider an absolute necessity, Rochester's waiting for it. For the city has learned that the fertile minds of America's inventors can reap millions of dollars for everybody concerned and keep Rochester's industries going full blast. •

Cast aluminum holder fits on regular parking meters and holds paid advertisements. These Rochester gadgets will be a familiar sight very shortly.



1 From his home workshop, left, executive Carl Struves phones a small order of fine wood to dealer Albert Constantine, Jr.

Photos by Jay Seymour

Constantine—Woodcraftsman's Caterer

Many lumbermen spurn $3 sales to hobbyists but Constantine developed this "nuisance" trade into a $250,000 business.

By Ralph Coniston

EVERY three months or so a roll-gaited sea captain heaves anchor to leeward of the sales counter at Albert Constantine and Son's uptown New York City lumber yard, peels off a new $50 bill and orders:

"Stop me, boys, when that's all gone."

Then he stocks himself up with a supply of short lengths of rare tropical woods, bids the Constantines adieu and shoves off for his freighter. Aboard ship he stows his purchases in the trim, sea-going home workshop where he creates inlaid cabinets and ornamental knick-knacks of every description during the long voyages between New York and Africa, the place where most of the precious woods he bought came from in the first place.

The woodworking skipper may not be typical of the Constantines' 100,000 customers, most of whom are landlubbers. But the amount and variety of his purchases are representative of a sideline to the lumber business which the Constantines have exploited to great advantage to themselves as well as to their buyers. Because their trade is a wholesale enterprise, most lumber dealers regard hobbyists as a nuisance. Not so Albert Constantine, Jr., present proprietor of a flourishing business which his family started away back in 1812.

In 1934 Albert started encouraging small sales to hobbyists in his father's lumber firm. Today the hobby sales sideline is a $250,000-a-year business. This money dribbles in from customers in every state in the Union and in 26 foreign countries including Africa's Congo, where a missionary instructs native craftsmen in woodworking. The Constantine catalogue, a classic of its kind, now lists hundreds of hand and power tools, woodworking accessories, gadgets and everything else a craftsman needs, in addition to the rare woods

which first made the company famous. There are 101 of these woods in the catalogue, ranging from Amboyna burls grown on the island of Amboina in the East Indies, to zebra wood from Africa's West Coast.

You can walk into Constantine's and pick up nine cents' worth of hardwood—a six-inch piece of very soft basswood, the cheapest timber in the house. Or you can sink your savings in African gaboon ebony, the most expensive wood available, at $1.80 for a square foot only ⅛ inch thick. A recent order for birch and maple, considerably cheaper than this all-black ebony, ran up to $700.

There's a rarer hardwood that Constantine has had to drop from his regular list. It's so hard to get that even he can't guarantee delivery. That's stinkwood—a very hard, very heavy and very putrid lumber. For this uncommon stuff you would have to wait at least till the next near-extinct stinkwood tree blows down in the Belgian Congo and hope that you could get a few splinters after the log is split up on the world's log market.

Currently the most popular wood is mahogany, a perennial favorite. For a while after the war there was a fad for light woods but lately there has been a strong swing back to this handsome hardwood. Next to mahogany, Constantine's clients like walnut best, with maple and birch running third and fourth in the hobbyists' craft parade.

While most woodcraftsmen devote themselves to bookcases, coffee tables and other usual items of furniture, occasionally one comes up with a novel variation. Memorable among these was the customer who asked Mr. Constantine to measure him so that he could be sure of ordering the correct footage of expensive mahogany he wanted. Though rather startled by such an odd request, Constantine carefully took the gentleman's height and then asked the same question you and I would ask. The customer finally admitted that he was going to use the mahogany to build himself his very own, custom-made coffin!

Constantine can understand even coffin craftsmen, however, because he is a keen hobbyist himself. As a boy, he worked with his tools at a bench in the big family kitchen, using scraps of wood his father brought him from the yard. But even then he found, as many woodcraftsmen have, that he couldn't always get the particular kind of wood he wanted in the particular length, width and thickness he had to have.

2 Cut to precise specifications, the order is carefully wrapped in heavy paper and cardboard to insure its arrival intact.

3 Receiving the mahogany by mail a few days later, hobbyist Struves starts laying out the wood for his project—a side table.

4 And here, not long afterward, Struves relaxes after pleasant hours of labor which produced the inlaid table at his left.

Later, when the younger Constantine went into the wood business with his father, he hit on the idea of making a profitable sideline out of catering to home craftsmen. The elder Constantine, who was then head of the firm, took a rather skeptical view of his son's plan. After all, a major part of the business was—and still is—built on the sale of veneers and logs to furniture factories. A single lot of lumber the elder Constantine once sold to a customer filled up 35 freight cars and carried a $225,000 price tag. To a man accustomed to deals of that size, $3 sales to hobbyists did not sound particularly attractive. He finally succumbed to his son's enthusiasm, however.

The senior Constantine, who died last year, devoted nearly all of his 86 years to a career in hardwoods, especially mahogany. A top expert on all cabinet woods, his intimate knowledge of African mahogany often was uncanny. After looking at an untrimmed log, he could tell you the seaport from which it had been shipped, the grain of the wood and even the figure of the grain in the various parts of the log—almost, they said, as if he had X-ray eyes.

Until 1946 Constantine stocked only woods. Then the firm bought out a competitor, the Thurston Supply Co. of Anoka, Minn., which sold tools and other craftsmen's supplies in addition to wood. Thurston's has been transplanted to the Constantine plant at 797 East 135th Street, New York. Now Albert takes great pride in the fact that he can supply any hard-to-get item a craftsman may want, whether it's a dime's worth of odd hardware or a $1000 power tool.

The stripe-grained zebra wood that John Dresch is inspecting is very beautiful—but smelly.

But there's danger in having too much fine equipment around you all day, Constantine ruefully admits. At any rate, he succumbed to the lure of all the ideal material for a fancy craft setup so near at hand and recently installed an elaborate new workshop in his own home at Speculator, N. Y. For his de luxe shop he selected one of every item in the Constantine catalogue.

Among Constantine's steady customers are many celebrities, including U. S. Senators and Congressmen, a governor and stars of stage and screen. Not long ago a prominent international lawyer stopped in to buy some ebony. With him was a subordinate who remarked upon the high price of the wood.

"My boy," replied the lawyer, "if you figured the time that I'm going to put in working on this ebony, it would probably be worth $15,000. In comparison with that, why worry about the price of a little wood?"

Catering to craftsmen, Constantine feels, has paid him dividends in friendships far beyond the cash profits. One of these friendships began when the mailman handed him a package containing a mahogany panel beautifully inlaid with strange characters carved out of holly. It turned out to be a gift from the Rev. Mark Kent, a Catholic missionary whom the Japs interned in Korea during the war. Because working with Constantine's woods had helped him endure his long imprisonment, the priest had painstakingly carved out the panel for Constantine and inlaid it with the Korean equivalent of "Thanks a lot."

The fine woods he sells, as well as the customers who buy them, are a constant source of fascination to Albert Constantine. The history of the world might have been different, he likes to remark, if the English had not had such an ideal wood for their archers' bows as yew. "Or think of mahogany, of which it's said every log brought out of Africa costs a man's life," he adds.

"Some woods have personalities that either agree or conflict with a craftsman's own personality," Constantine thinks. "Take rosewood, which not only is beautiful but has a lovely odor, from which it gets its name. Yet, for some people rosewood is poison. They swell up horribly if they handle it. Boxwood is another fascinating wood that may make you miserable with a bad case of allergy.

"But for just sweet-smelling wood, I think it's hard to beat satinwood. The worst smelling? Zebra wood, by a nose!" •

Magnet Pencil

THIS MONTH'S **prize gadget**

LIFE was an unhappy one for Charles Boyd of Detroit, Michigan.

He had an affliction which every home-workshop addict gets at some time or another—one no doc could cure—and it was driving him to despair.

Tool Dropsy is the technical name for his trouble. It seemed that every time he got his hands on a piece of work, some workshop gremlin would pull the file, screwdriver, or whatever tool he was working with, right out of his fingers. At least it seemed that way. It was exasperating. Furthermore, the tool never fell in a spot where it could be recovered easily, either.

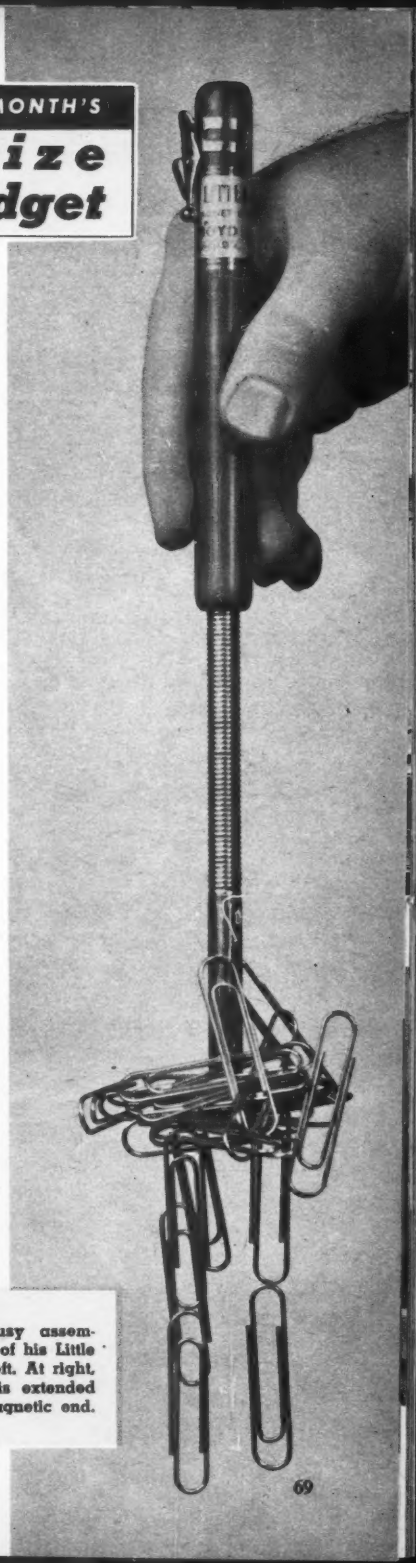
Boyd decided to put a stop to it. He slept on the problem and found a solution. Back at his workbench, dropsy and all, he came up with a collapsible, magnet pencil which could clip to his pocket. Now when he drops a tool, he unlimbers his pencil, pokes it at the elusive item, and a strong magnet lifts it out for him as pretty as you please.

When Boyd's friends saw his gadget, they all got the gimmees and it wasn't long before he was in business. The production model he will call Little Giant.

He has found other uses for it, too. One of these is to clean up chips and shavings around the shop. Another is the MI Gadget contest, whose editors herewith award it the $50 prize this month. •

WIN $50

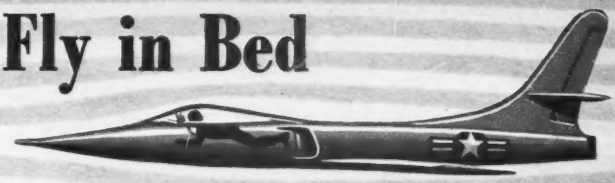
Think you're a good gadgeteer? If you've dreamed up some neat new gimmick, get busy and work it out in your shop. Then send pictures and a detailed description of your invention to The Gadget Editor, MECHANIX ILLUSTRATED, 67 West 44th Street, New York 18, N. Y.



Boyd is busy assembling some of his Little Giants at left. At right, the pencil is extended showing magnetic end.

Sectional view of the prone pilot bed superimposed on conventional jet fighter shows the radical reduction in diameter of the fuselage which would be possible. Armament is air-to-air missile launcher.

Jet Pilots Fly in Bed



Greater fuselage streamlining, above, makes prone-pilot jet look like a guided missile. Below is similar view of XF-90 with pilot in upright position. Armament area below pilots is same in both models.

THE United States Air Force is putting its flyers to bed so that they *can't* go to sleep!

If that seems sort of cryptic to you, be assured that it should. For it's only a complicated way of saying that a prone position bed for pilots to reduce the possibility of blackouts and ease the strain of sitting has been developed at the Aero-Medical Laboratory of the Air Materiel Command in Dayton, Ohio. Gravitational pull and flying fatigue are the pilots' worst enemies. During Air Force tests, flyers in the prone position withstood up to 12 g's without blacking out. Regularly seated pilots can take less than five g's.

This safety feature has an added advantage, too. Less space is required for the cockpit, thus permitting a slimmer silhouette on the plane itself. The reduction in drag permits much higher speeds.

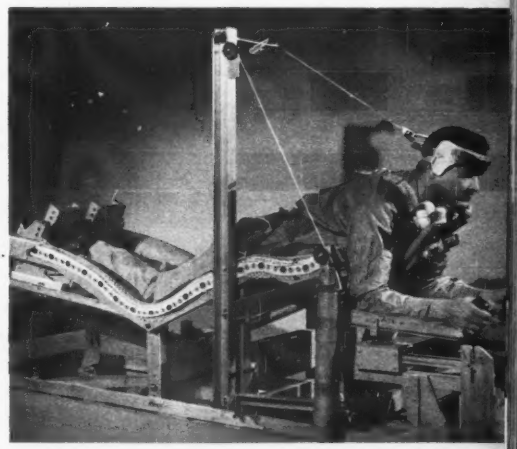
The bed itself consists of a length of nylon netting, supported over specially constructed sides which conform to the body contours of the average pilot. The support can be adjusted to the individual by raising or lowering the netting under the pilot's abdomen. Strangely enough, tests have shown that thinner pilots require more support than plumper ones. Their flat abdomens don't provide enough support to keep the lumbar regions of their spines from sagging.

Special controls for the prone position have also been worked out. Two movable pans with adjustable handgrips act as levers for steering the plane. The pans are padded with foam rubber so they are comfortable over long periods of time. They're also adjusted so that control movements are not affected by high gravitation forces.

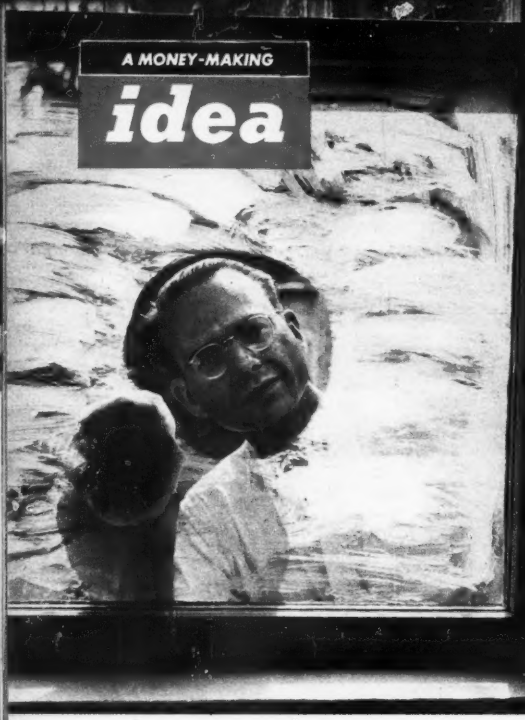
A padded jaw supports the flyer's head and a counter-weighted headrest further relieves strain on his neck. Then, there's a leg separator which gives each lower leg its own support. This avoids the tendency of the inner surfaces of the legs to sweat and it prevents pressure on the inner surfaces of the knees. Feet are braced against adjustable pedals which serve as rudder and brake controls.

Latest word on this prone position pilot bed is that it was installed in the nose of a B-17 for test purposes and was also tried out in the forward part of an F-80 jet craft. And you can bet the Air Force hasn't dropped the matter there.

One of these days you'll be seeing a slim, rocket-like jet plane zooming over the horizon. Then, you can nudge your neighbor and slyly say: "There goes a bed-ridden jet!" •



Here's one of the prone position pilot beds which was developed by the Air Materiel Command.



My Business is Cleaning Up

That face in the mussed-up window belongs to a rugged ex-major who convinced his wife he did better housework than she—at $50,000 a year.

By Jack Robineau

ONE evening when I returned to my home in Ossining, N. Y., after work, I opened the door and found the living room in wild disorder—the furniture all askew, pictures, books and papers strewn across the floor, rugs thrown crazily over the sofa, and my wife moaning and straining to move an upset bookcase that had her trapped in a corner. It looked like a Jap Kamikaze had crash-dived into the house.

"What happened?" I asked as I pulled her out over the toppled bookcase.

"Oh," she sighed wearily, "it's just the fall housecleaning."

I must have looked pretty disgusted.

"Well," my wife challenged, "think you can do any better?"

I grabbed a rag and pointed out how much effort she was putting into scrubbing one small spot on the floor. Then I wrapped the rag tightly over the head of the broom and showed her how she could cover four times as much area with less trouble by simply standing up and brushing the broom-rag back and forth.

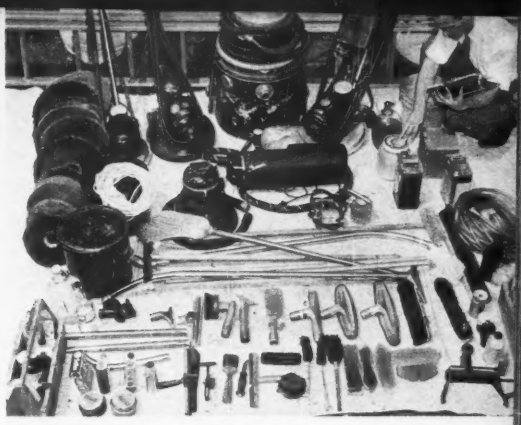
Aside from wanting to prove to my wife that a man could clean house better than a woman any day in the week, I had something else in mind. Like so many other GIs overseas, I'd dreamed of coming home to a better life, in which I'd be my own boss. Now with the shortage of maids and my experience with the housewife's heavy-cleaning troubles, I thought there might be a wide-open field for a really professional, all-male housecleaning service.

This idea of professional housecleaning looked so good after a bit more experimental homework with my wife, I tossed over my sales-promotion job in New York and started promoting plans for what eventually became a $50,000-a-year cleanup business I call the Westchester Housecleaning Service.

To keep down the overhead, I used my home both as an office and as a test lab for trying out new timesaving techniques, special soaps and cleaning equipment. I sought to take full advantage of labor-saving machines, such as commercial vacuums, floorwaxers and carpet shampooers; and of mechanical aids, such as extra-wide brooms and double-holders for razors to clean paint off windows. I also cut costs by buying soaps and cleaning materials in bulk lots and rags by 150-pound bales.

I hired four veterans—all husky men, of course, since I wanted no women on my professional housecleaning team—and spent two weeks in training them in my short cut methods of handling each special phase of the work. [*Continued on page* 74]

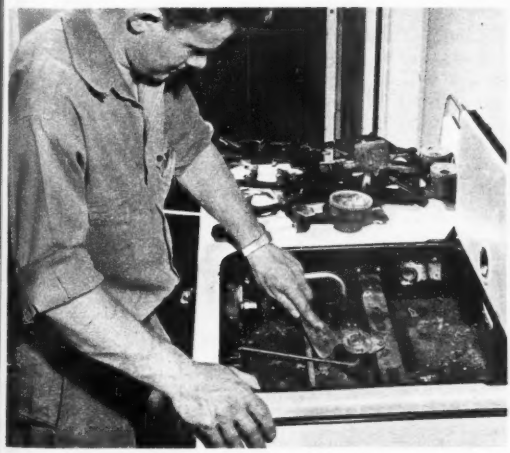
1 Here's how a one-day cleanup job starts on the 10-room home of F. W. Squires in White Plains.



2 Robineau checks all his equipment and materials on the lawn to be sure that he has everything.

3 Teamwork like this renovates a run-down house in record time as everyone does a special job.

4 Eddie Fitzgerald, Jack's foreman, vacuums up the suds as his assistant shampoos the carpet.



5 Hardest work in the house is cleaning out the stove, which must be taken apart for scraping.

6 Eddie defies Jack to find a dust speck on that light as the boss inspects the finished job.

My Business is Cleaning Up

[*Continued from page* 72]

By the end of the first year I'd cleaned up a $3000 profit. Now I'm making considerably more from a $50,000 business and expanding fast. I've got a crew of nine men that I've trained to go through a ten-room house in a single day, expertly cleaning walls, ceilings, windows, stoves, shampooing rugs, polishing floors and furniture, mothproofing, dusting, doing minor repair work and generally sprucing up the place from attic to basement.

Biggest job I've had so far was a 36-room mansion in Chappaqua that took one man all day just to polish the fancy banisters from the third floor to the first. The toughest one, though, was only a six-room affair. After we'd finished a painstaking scouring of practically every crack in the home, the woman of the house put on white gloves and went around rubbing her fingers everywhere to find dirt. She did—in a couple of spots—one behind a radiator and the other on top of a door.

There's plenty of work in every community for professional housecleaning—attic to cellar in one day—since most housewives would gladly mortgage their husbands to get out from under a load of heavy homework.

Here's what you need to set yourself up in the business: (1) a second-hand truck or a car you don't mind beating up with cleaning equipment; (2) three vacuum cleaners—a big commercial job, a portable one for stairs and an upright vacuum to touch up work at the end of the main cleaning work (they'll cost you $450 to $500 new); (3) two floorwaxers—one for polishing the floor (about $200), the other for shampooing carpets ($250); (4) soaps and cleaning material in bulk ($100-$150); (5) two ladders—one a straight extension affair of light metal, the other a short three-stepper ($100-$150); (6) a 150-pound bale of rags ($70) and (7) brooms, buckets and miscellaneous small equipment ($50).

You should have at least four men so you can tackle the work with an efficient team. For a safe start, then, you ought to be able to raise the equivalent of $3500 to cover the cost of all your equipment and the salaries of your men till you're rolling along out of the red. In a few weeks you can figure on an income of $75-$100 a week, then—like me—you can keep going up from there, limited only by your own initiative and industry in building up new trade in your area.

After two years and over 1000 profitable jobs, my business is definitely cleaning up—everywhere except in my own home. My wife keeps hinting now that our own place is getting dirty, too—and even admits that housecleaning is one job a man *can* do better than a woman. For that admission, I guess I'll finally have to come clean at home—but with the full aid of all my housecleaning commandos. •

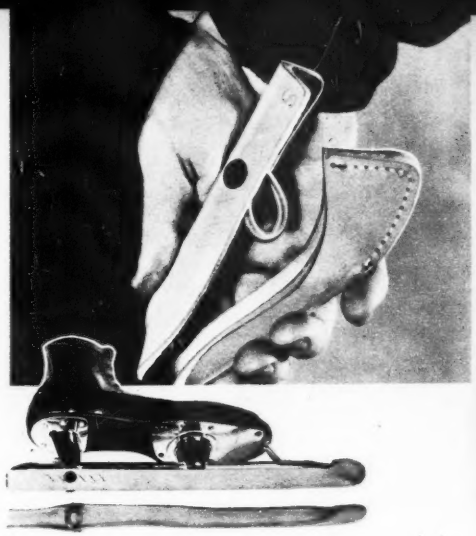
German youngster guards injured person in lightweight stretcher while man in booth telephones for ambulance.

First-Aid Booth

THE Germans have designed a street first-aid booth which seems to have everything. Well, practically everything.

First, naturally, there's a first-aid kit and a folding stretcher on wheels. This is so light it can be pushed by a child. Then, there's a public telephone and a fire alarm. For the policeman on beat, there's a special wire to the station and on the wall is a mirror for last-minute grooming. On top of the booth is an illuminated clock and a blue light which blinks if somebody wants a policeman.

If plumbing facilities had been available there'd probably be a kitchen sink, too. •

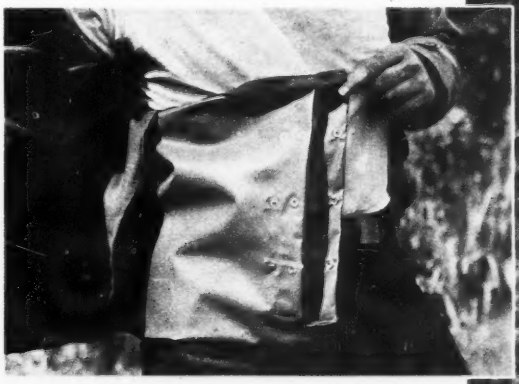


Skate Guard constructed of leather and adjustable, folds up and tucks away in your pocket when not in use. It comes in sizes to fit hockey, figure and racer skates, and assures complete protection for the blades. Called Polar by Polinsky & Sons, N. Wells St., Chicago.

Fluorescent Red describes color of this Saf-T-Jac for deer hunters who dislike becoming targets for poor-sighted companions. It is washable, won't fade and its burning glare reaches out to make you visible in fog and dusk. Saf-T-Jac, W. Lakeside, Cleveland, O.

NEW for the SPORTSMAN

Zipper Game Bag is a new gimmick in this sturdy hunting coat by Masland. Game can be inserted through snap on either side; entire bag is zipped out at the end of the trip. Coat is wool-lined, snagproof, has shell loops and reinforced pockets. Bag is rubberized. Made by C. H. Masland & Sons, Carlisle, Penna.



Tunnel-Hull Boat Won't Roll

GAR Wood, the silver-haired king of speedboat racing, has designed the most stable boat in the world.

The no-roll Venturi is 188 feet long and 40 feet wide, and has twin hulls which slice through the waves instead of climbing over them as do conventional craft. Propellers are 4½ feet in diameter and extend below the hull, increasing draft at the stern to about 8 feet when underway. At 26 knots the air rushing through the tunnel buoys up the ship so that she draws only 6 inches

Gar Wood shifts variable pitch propellers from astern to neutral to ahead by remote control.

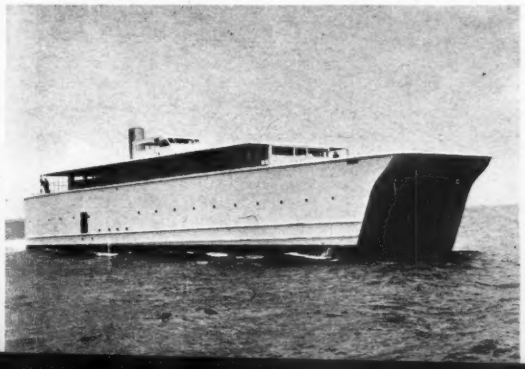
At 26 knots waves roll their crests along her sheer sides while she rides along undisturbed.

Tests show that a 16,000-ton liner of Wood's design would have a speed of 38 knots, more than any other commercial vessel, at 120,000 horsepower. The Queen Mary of 80,773 tons has a speed of 32 knots with 200,000 horsepower.

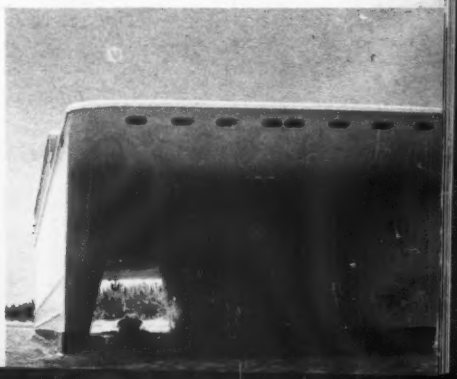
of water at the bow. This air cushion also acts as a shock-absorber for all up-and-down movements of the boat. Wood says, "We have sailed in seas so rough that 60 of our 188 feet have been out of water between wave crests, and have made full-rudder turns at top speed with waves 10 feet high and we didn't heel over more than one or 2 degrees."

The present model was originally designed as an AAF target vessel resembling a baby flat-top. It has four pancake Diesels totaling 4,800 horsepower, is flat-bottom with a gross weight of 120 tons. Engine rooms are located ⅔ of the way aft in each hull. Hulls are planked in ⅝-inch 9-ply mahogany. Forty watertight bulkheads make it unsinkable. •

Large mass above water is subject to wind so retractable propeller will be used for docking.



A special fishing cruiser fits flush under the tunnel and can be lowered quickly when desired.

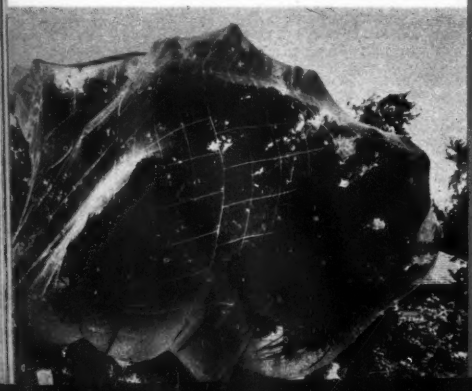


Glass Dinghy may open a whole new field in boat building. The six-foot, 30-pound craft is made of translucent Fiberglas and has a sturdy hull only one-eighth of an inch thick. From bow to stern there's an elongated skeg which serves as the keel. Sid Hall, P.O. Box 137, Sausalito, Calif., hopes to start construction soon of racing shells, too.

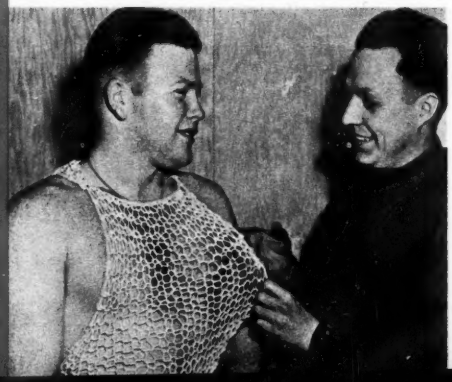
Spuriscope tells the difference between a counterfeit bill and a genuine piece of money. The user dials the serial number which is on the currency and there appears on the machine an alphabetical series designation. If the bill in question does not bear the same letters, it's counterfeit. Accurate Molding Corp., Long Island City, N. Y. makes it.

NEW in SCIENCE

Tree Bandage protects this cherry tree from hordes of hungry robins. Every year, Arthur Axx of Lakewood, Ohio, would watch helplessly. This year he bought yards of tobacco cloth and wrapped it around the branches. Result? The robins stared wistfully from their telephone wires and then flew on to greener orchards—probably yours!



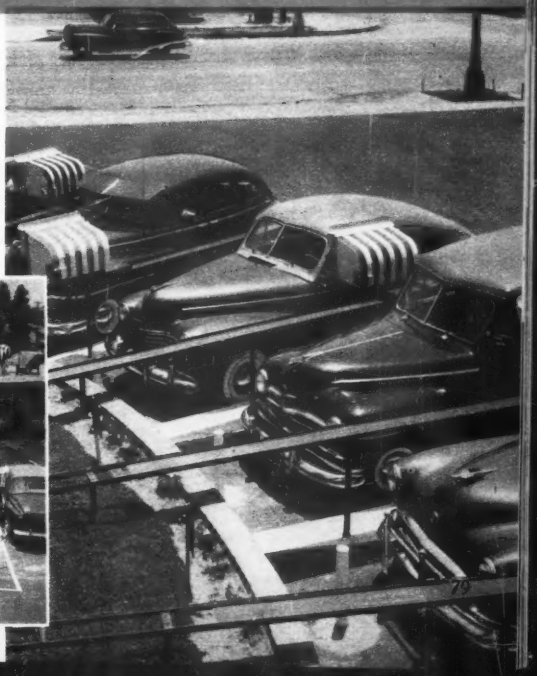
Fish-Net Shirt is a satisfactory substitute for the Eskimo caribou garments in the Arctic. It allows body perspiration to evaporate and form a vapor barrier, thus conserving all possible natural heat needed in frigid climates. First used in the Canadian Arctic by Operation Musk-Ox, this hole-some shirt is now worn under army winter underwear.



Electric Hand is made of a lightweight metal, driven by a tiny motor installed in the wrist. The electric engine operates off a six-volt battery. A button attached to the user's upper arm allows the motor to be switched on or off merely by pressure against the body. Device was developed by Friesecke & Hoepfner of Erlangenbruck, Germany.

Giant Chronograph watch was built at the Western Pennsylvania Horological Institute to teach students how to repair this type of timepiece. It's 23 inches in diameter and the entire movement weighs about 60 pounds. The difference between this model and its tiny counterpart is that the big watch has its transparent face on the back.

Motormat Drive-In serves hungry motorists by electric cable cars. You park in stalls around the wheel-like layout, write your order, place it in the carriage and push a button. This sends it back to the kitchen on the spoke-like tracks. There, the order is filled and returned to your car. Nothing mechanical about paying: an attendant collects.



MI Tests the 1950 Studebaker

"One of the best dollar values today," says Tom McCahill. They're not the fastest cars on the road but they're tops in comfort and quality.

Tom found the new Studebaker handles better at high speeds than its predecessors.

THE new, needle-nose Studebaker gives the boys of the Big Three something to shoot at. Back in '46, with the introduction of the 1947 Studebaker designed by Raymond Loewy, this first real post-war auto stirred up the populace. And now, once again, Loewy has set the pace with the 1950 Studebaker.

To this writer, however, it looks like the Studebaker people did a bit of borrowing themselves for a change. Most of us knew it would be just a matter of months before the Tucker "turkey" was laid on the Thanksgiving table for carving. Well, it appears as how Studebaker has started the dissection rolling by slicing off the Tucker nose as their helping. When I was first asked by a Studebaker executive what I thought of the new car I told him, "Though it's not exact, the front looks as though Tucker must have passed through South Bend on a bicycle." He quickly pointed out that I was wrong and said he could prove how it varied. But I'll stick to my guns and say again that, to my eyes anyway, it looks like the turkey is on the table.

Don't think for a moment I disapprove of the Studebaker beak. With the Tucker out of the picture, I think this new Studie is the best looking car in its class. It certainly proves that the boys of this independent company are wide awake and still way ahead of the competition in design. This is no small feat for any outfit to pull off four years in a row.

There have been other changes in the 1950 Studebakers, such as an increase in the wheel base (one inch on all models) and much better front-end suspension. The rear of the car has undergone some modification too. There's a large, new tail light and a general refinement of all hardware.

Beak on the new Studebaker, says McCahill, looks very much like the nose of the dear departed Tucker.

It's not really amphibious, although McCahill put it through a rough water trough test at 60 mph.

There's not much change in the rear, although the back fenders are higher and it has a new tail light.

All four fenders are individually bolted on, so that in the event of a minor crash, an entire new side is not required. Today, this is a feature well worth considering. The horsepower has also been jacked up. Taking everything into consideration, the new jobs are better cars than previous models. And, as most Studebaker fans know, there was very little wrong with them before.

The dash or instrument board is several inches further forward than in the past. Incidentally, the Tucker dash was way forward too. Enough of this small talk, though, let's drive the car!

Undoubtedly the unhappiest man in South Bend was Bill Ayres of the Studebaker public relations staff on the day I arrived. Usually, I drive to the factories for tests but this time I elected to go by rail. My train pulled into South Bend just after six in the morning [*Continued on page* 140]

SPECIFICATIONS

MODEL TESTED:
Studebaker Champion, four-door sedan.

ENGINE:
6 cylinder L head; 169.6 cu. in. piston displacement; bore 3 in., stroke 4 in.; 85 hp at 4000 rpm; compression ratio 7 to 1.

DIMENSIONS:
Wheelbase, 113 in.; overall length, 197¼ in.; overall width, 67⅞ in., overall height unloaded, 61½ in.; tread, 56 7/16 in. front and 54 in. rear (most American cars do not have a front tread wider than the rear); tire size, 15x6.40; fuel tank capacity, 18 gal.

PERFORMANCE FIGURES:
0 to 60 mph in 17.6 seconds.
0 to 70 mph in 26.6 seconds.
10 to 60 mph in high in 21.1 seconds.
½ mile from standing start, 35.1 seconds.
Top speed (actual) 80 to 82 mph.

SPEEDOMETER ERROR:
At 60 mph speedometer reading, the actual speed was 57.69 or an error of 2.31 mph.
At 75 mph speedometer reading, the actual speed was 71.71 mph or an error of 3.29 mph.

Just after this peaceful scene was shot, Tom drove this roadster at 102.2 mph.

MI Tests the Lea Francis

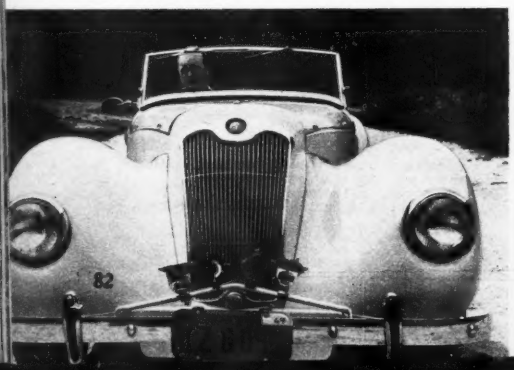
LEA Francis isn't an old-time Follies girl nor a brand-new movie import—it's the name of an English automobile, and a truly terrific one at that.

When my piece about my dream car was published in these pages last January, it brought in quite a few letters, among them one from a famous English road race driver named Dudley Froy. He told me he had a car exactly like my dream car—or near enough—and would like me to try it. This was the Lea Francis, for which he is representative on the West Coast.

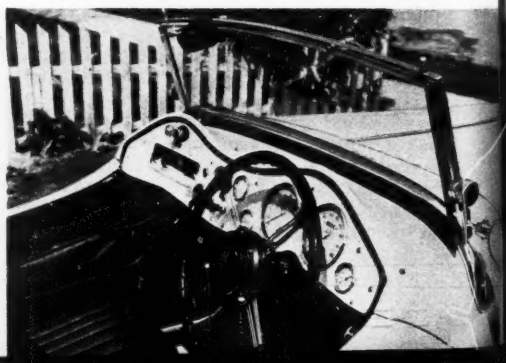
Well, what with one thing and another, I wasn't in one place long enough to answer his letter. But while I was in Los Angeles, I gave him a call. He asked me to his house in Burbank and said he'd give me the ride of my life. I hopped right over.

My first impression of the Lea Francis was that it was on the smallish side for a car with a $4600 price tag. And speaking of price, in his letter Froy had strongly questioned my dream car's projected cost of $50,000. I must have written that article badly because many readers got a wrong impression. To clear up the situation once and for all, if produced in quantity my dream car would cost about $3500 a copy—not $50,000. The $50,000 figure I quoted

Clean lines of the Lea Francis are reminiscent of some of our prewar American custom-built jobs.



Right-hand drive, bucket seats, tachometer on the dash and hand brake between seats, are all British.



Dudley Froy, left, famous English road racer, put this car—and Tom—through the rope

"A truly terrific automobile" gasps Tom (Hair-raised) McCahill after going for "the ride of my life" in this fast British sport car.

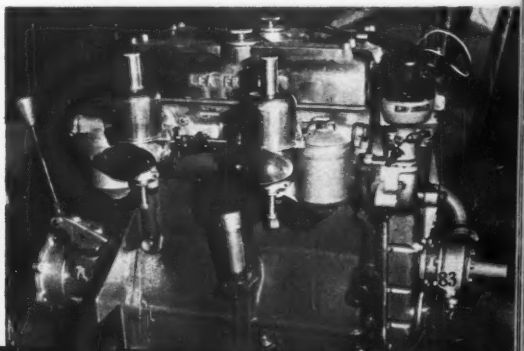
was the cost of building a pilot model and anyone in the business will tell you fifty grand is peanuts for an original car.

But to get back to the Lea Francis—it struck me as good looking but without the sexy, E. Phillips Oppenheim, Continental appeal of its closest English competitor, the Jaguar. However, when I looked more closely I found that this Lea Francis has a heart of pure gold. I never expect to see a more jewel-like engine or chassis, nor tougher ones, ounce for ounce. The car's powerplant is a magnificent example of real automotive engineering art.

On my initial ride, Froy took the wheel and off we shot for the nearby California hills. Before we had gone two blocks I realized that this guy Froy wouldn't have too hard a time passing his driver's license test. He bit into turns at better than 70 and snapped his car, of which I was growing fonder by the moment, like a Mexican quirt. On one serpentine stretch he had me holding on to keep from spinning around the cockpit like a pea in a whistle. I rapidly became convinced of two things: first, that Froy was one of the hottest road drivers I have ever ridden with, and second, that this Lea Francis was a hell of a fine automobile. [*Continued on page* 142]

The Lea Francis's four dome-shaped pistons aren't very big but neither is the atom bomb, says Tom.

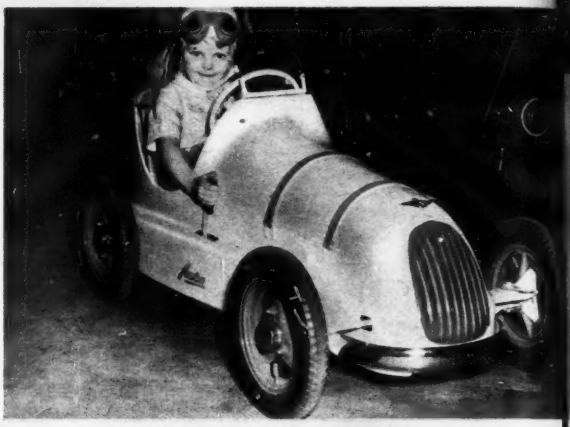
A "magnificent example of automotive art" is what McCahill calls the Lea Francis 94-hp engine.



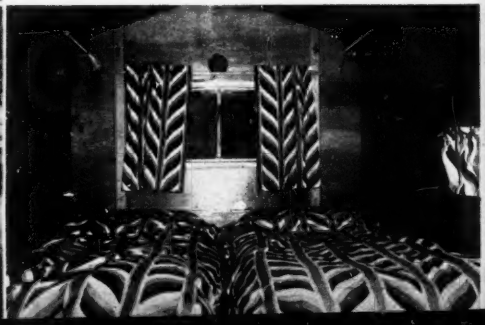
NEW on the ROAD

Cycle Rickshaw is a novelty motorcycle cab which is becoming popular in Germany. Its main virtue is economy—it can make 60 miles on one gallon of gas. Top speed is 31 mph. It was recently exhibited at the Hanover (Germany) Trade Fair and will probably cost $700 when it hits the American markets.

Baby Austin is the latest tiny auto turned out by Britain's famous Austin Motor Company. This one, however, is really for babies—it has no motor. Youngsters have to provide their own pedal power. These kiddie vehicles are being made mainly for export and will sell for about $100. Austin Motor Company, 250 West 57 Street, New York, New York.



Auto Tent is a handy portable hotel for sportsmen. It'll also solve the sleeping problem for ordinary tourists. A ten-foot platform is mounted on the roof of the car with a tent covering which can be folded up, left. It can be fully opened within a minute and a half, lower left. Inside are two regular-size air mattresses, below, for peaceful (and inexpensive) sleeping. Robert Bickel, 1627 Grand Ave., Cedar Rapids, Iowa.



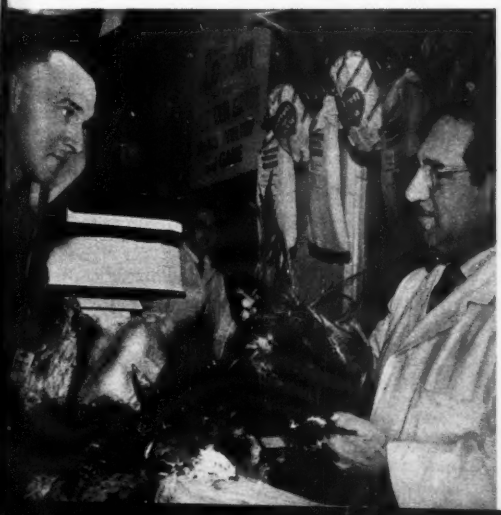
Game Warden Stamir, right, checks a striped bass at a New York market to see if it's 16 in. long.

These big Maine lobsters have no trouble passing the warden's inspection for full-sized shellfish.

Manhattan Game Warden

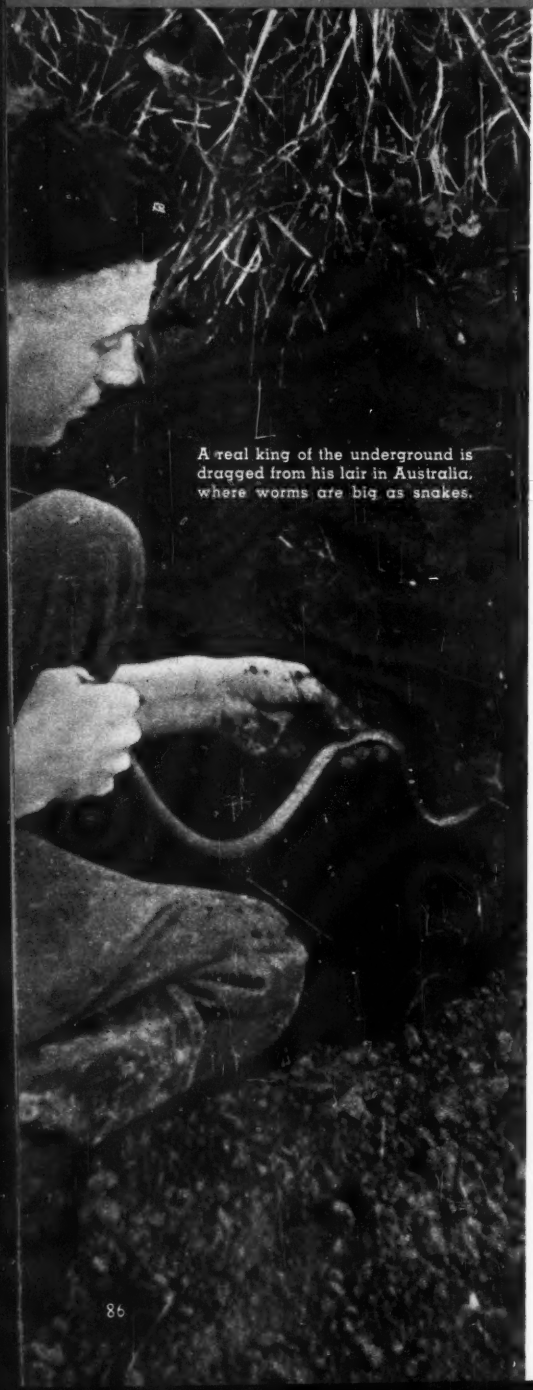
THE towering jungle of Manhattan's skyscrapers is the last place in the world you'd look for a game warden. But for ten years now George Stamir has been prowling the Big City's concrete canyons as a N. Y. State Game Protector. In a strictly noncamping business suit, Stamir patrols the streets from his office "camp" at 15 Maiden Lane—a spot that for 300 years has seen nothing wilder than a wilted white collar. He hasn't caught a hunter bagging a buck in Times Square yet—but he does nab feather merchants for trafficking in eagle plumage and fish-market fishermen for selling small fry or baby clams. •

That's real game the warden's spotted—ptarmigans from Scandinavia. He's looking for tags.



Stamir makes surprise visits to millinery shops—to look for forbidden egret or gamebird feathers.

KING of the UNDERGROUND



A real king of the underground is dragged from his lair in Australia, where worms are big as snakes.

By George Scullin

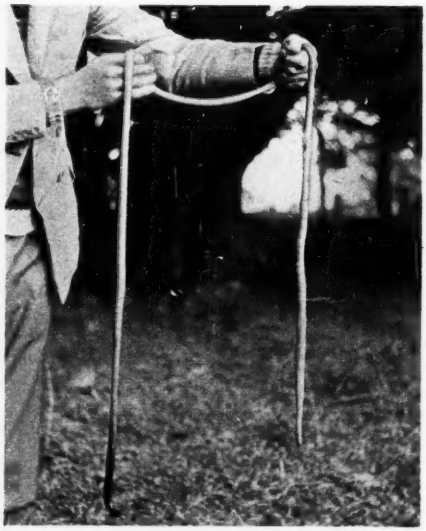
EVER been told to "go out in the garden and eat worms?" Was the idea repulsive to you? It shouldn't be, for there are many people in the world who find the earthworm a wonderful delicacy—and a most wholesome food.

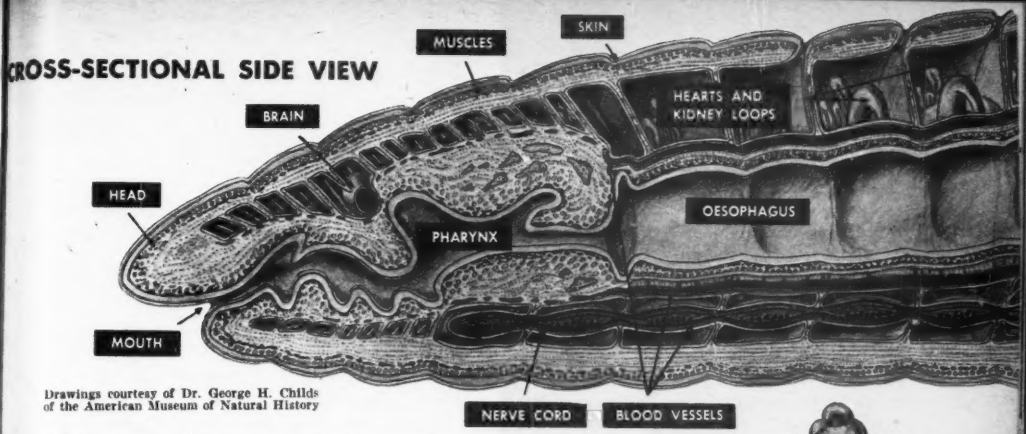
In New Zealand the Maoris serve a delectable dish that looks like noodles and tastes like stewed clams. The dish, of course, is literally full of worms.

In Africa several kinds of worm are eaten garden-fresh—raw. Explorers say they have a strong but pleasantly pungent taste. Two enterprising college girls, looking for new food sources for the Australian Institute of Anatomy, tried worms baked in ashes in New Guinea. Tasted like pork sausages, they reported.

For centuries the Chinese have used fried worms as medicine—and wisely so, because the somewhat repulsive (to Occidental stomachs, anyway) dish is rich in Vitamin D. And who doesn't know how juicily delectable a worm looks to a fish? But the earthworm's edibility is only one of many far more curious characteristics of the

Here's eight full feet of squirming worm—the same giant that was being pulled from the hole, at left.





Drawings courtesy of Dr. George H. Childs of the American Museum of Natural History

double-ended, bi-sexual little crawler everybody knows but knows little about.

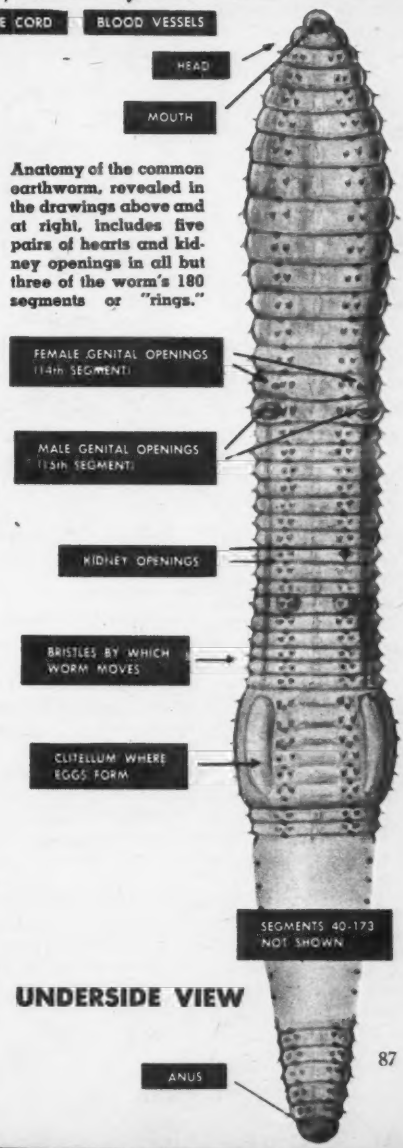
Scientists are well aware that for millions of years the earthworm has been a scientific farmer. By burrowing, it airs out the soil so it won't turn sour, and forms channels through which rain penetrates deep into the ground instead of running off the surface. Earthworms also fertilize the soil by dragging bits of leaves, grass and other debris as deep as a foot underground. Part of this serves as food but most of it becomes rich fertilizer through decay and bacterial action.

Some researchers assert that without the worm the ground would be packed hard as rock and could nourish neither tree nor plant. They argue that since all life on land depends directly or indirectly on green vegetation if man wipes out the worm he'll also wipe out the human race.

Because of the wonders worked by the worm in forming the soil for our forests and meadows, their importance to man's farming, however, has been exaggerated. Most experimenters find that worms actually are small help to the modern farmer who continually plows his fields.

When the plow breaks up a grassy meadow, the worm population may suddenly drop from a million an acre to less than a third of that number. Efforts to restock the soil with tons of fresh wigglers imported from earthworm farms do enrich the soil—but only temporarily, with their dead bodies. The worms simply don't like to live where the plow and the cultivator constantly threaten to break up their burrow homes.

The farmer shouldn't worry, though, when the worms vanish from his plowed fields. It would take millions of worms 50 years to turn over and air the same amount of soil he can till in a single day's plowing. And the fertilizer he spreads works far faster and better than the worm's slow



Anatomy of the common earthworm, revealed in the drawings above and at right, includes five pairs of hearts and kidney openings in all but three of the worm's 180 segments or "rings."

enrichment of the soil by digesting or burying vegetable debris.

The private life of the worm has long remained a mystery, since this primitive character prefers to spend practically all its life buried out of sight in its vertical little mines. The only time the worm comes up to the surface is at night. Then it keeps its tail anchored firmly in its hole while the rest of its body squirms about for dried leaves, grass or any dead animals or insects in its range.

Before dawn, the worm snaps back in its hole and plugs the entrance with a bit of debris. For if morning catches the wriggler above ground, the sun's beam will turn into death rays for the king of the underground.

As fatal for the worm as the sun is a heavy night rain. The thirsty little miner likes the moisture and wiggles up from the ground to enjoy a good "drink." Then the downpour loosens the soil around the burrow and washes the worm away from its hole.

Though it's nothing for a worm to sprout one new tail, this wriggler grew two at the same time.

Millions of these wandering worms are stranded far from home after such a rain and die in the morning sun or perish in the craws of eager early-birds. Some of the birds may accidentally drop a leftover worm into a rain barrel or water tank and thus back up the popular belief that worms "come down with the rain" or that they can squeeze themselves thin enough to wiggle their way through water-tight barrel staves. The water itself cannot drown them since they have no lungs.

The personality of the worm is hardly that of a real live-wire. Though the little creature has plenty of heart—five full pairs of 'em—it has no eyes, no ears, no lungs and only a wide spot on a nerve cord for a brain.

Science says the earless worm can't hear —but still R. B. Bilkosky, a restaurant man in Alhambra, Calif., did teach his worms to come up for lunch when he whistles. He owns the Sure Strike Angle Worm Farm, which raises and *trains* worms for fishermen. Though the worm has no eyes, it does have in its segments photo-electric cells that are sensitive to light. Bilkosky took advantage of these cells to make his blind pets respond to light that shone in the burrows.

Every time he turned on the light he'd whistle. The worms squirmed out and he'd feed them. Then one day he found he didn't have to use the light. He'd just whistle and the worms wriggled up for lunch.

With what cells or organs the earless worms heard Mr. Bilkosky's whistles, nobody has yet discovered. But science has found out plenty about the mixed-up love life of the little wrigglers. Every earthworm is both male and female at the same time. Many of the more than 2000 varieties can reproduce babies without mating. Most, though, prefer to ignore this self-sufficiency. They come up to the surface at night and mate by contact.

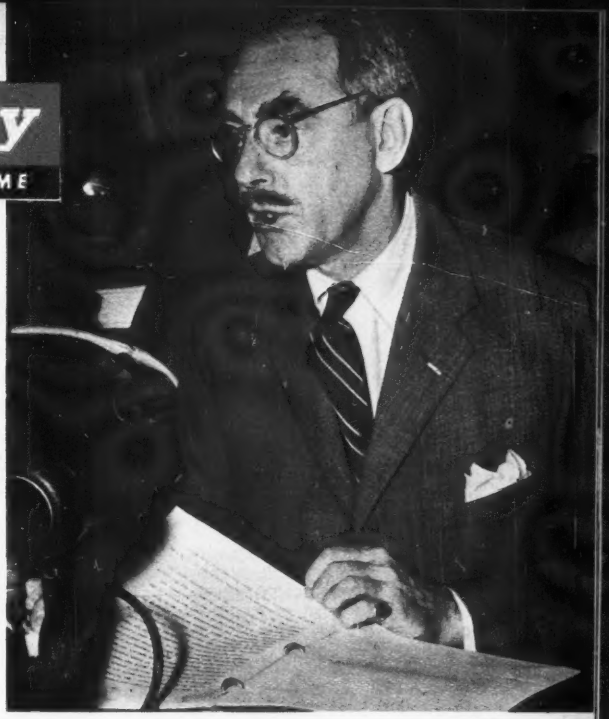
You can find earthworms all over the world, even on the most isolated island in the ocean. They vary in size from tiny one-inch squirmers in America and elsewhere to eight-foot monsters in Australia that make a startling slurp like a heavy boot in mud as they move around under the surface.

Worms bury not only themselves but many of the most prized works of man. They build up earth around a monument or building, then cut burrows under the foundations to undermine it further. The worms' castings rise about the building at a very slow rate—an inch every ten years. But the combination of the worm-raised ground and the sinking of the foundation to the depth of the burrows can make any building sink out of sight when the process is repeated for generations.

When that worm does turn, then, it can make the walls of man's mightiest structures come tumbling down and prove the humble little crawler's right to its royal title: *King of the Underground.* •

hobby
HALL OF FAME

Dean Acheson



Secretary of State

Dutch Attack Indonesian Republic—Revolution Rocks South America—Arms for West Europe—Cold War Turning Hot

SUCH were the grave issues that faced the Honorable Dean Acheson when he took office as the 50th United States Secretary of State in January of this year.

To keep fit despite the terrific strain of his high office, Acheson tried horseback riding and wood chopping on his Harewood Farm, near Sandy Spring, Md. Such routine exercise, though, failed to keep him from fretting overtime about the tense problems of our upset world.

Then fortunately, a personal worry arose. The rooms on his farm badly needed new furniture but he couldn't find the time or the energy to search through crowded stores for just what he wanted. So, he set up his own workshop and got busy.

Sawing up lumber and shaping it into finished furniture soon absorbed all his spare time. He found new strength and a fresh spirit for tackling the current international crisis after relaxing his own tension by creating a smart table or a comfortable chair.

Already he has turned out two tables, a bookcase, a hanging book rack, several cabinets and a number of chairs of different styles. Soon he will have his farm fully decorated with his own hand-made furniture. After that? Well, he's got his eye on his own office. Plenty of room there for real handicraft to brighten up the gloom of the somber old State Department building and help chances for peace, too. •

Craftsman Acheson relaxes from worries about war and revolution by sawing plywood for a cabinet in the well-equipped workshop on his Maryland farm. Note the neat setup he's made for his handtools.

CRAFTS and HOBBIES

Workbench Award Winners...

Working from his own designs, Carl W. Mikan, of Trafford, Penn., made this control-line model twin-engine transport. It has a wing span of 5 ft.-7 in. and weighs 11 lbs. with one-half pint of fuel aboard. Two Ohlsson and Rice .60 engines with three-blade props provide the power. Featuring a tricycle landing gear, the plane was framed up in usual manner, then planked with 3/32-in. balsa. It took 435 hours to build.

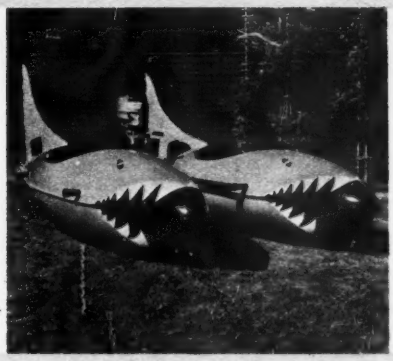
THE winner—all of 'em! The six projects shown on these pages were the best Workbench Award entries received during the month. A five dollar check and a Workbench Award Certificate is being mailed to each winner for his prize project.

If you are a workshop fan then why not let us know what you're doing? Send us a picture plus a letter describing your project and if your entry is one of the monthly winners you'll receive our check and Workbench Award Certificate, which incidentally, is suitable for framing. If your entry is not one of the published winners you still may win our handsome Certificate of Merit. Past winners of Workbench Awards may submit new entries, but the photos must be of a new project. Clear snapshots will do but wherever possible glossy enlargements are preferred. We like to see your creations—but we also like to see you, so if at all possible submit a photograph of yourself with your project. Enclose sufficient stamps for return postage and mail your entry to:

MECHANIX ILLUSTRATED Workbench Awards, 67 West 44th Street, New York 18, New York.

Photo-Fan Andrew Rohaly, Jr., of Beverly Hills, Cal., used MI's Plan No. P-2 when he decided to make a parallel-arm enlarger. Mrs. Rohaly says, "My husband has found so much pleasure in working with MI's plans. The enlarger was made from the following ingredients: an old bed, a wastebasket, a lye can, a pineapple can, an 1897 camera that cost $5, an old felt hat, and accessories picked up around the shop. The total cost was approximately $10 and the enlarger does excellent work up to 14x14 in. We both spend several nights each week printing pictures with it. Thank you for your good plans and interesting magazine." And thank you Mrs. Rohaly, for the opportunity of sharing with you your pleasure in your husband's craftwork. He is indeed lucky to have a spouse like you to work alongside him at the same hobby.

Jason Petroelje, of Holland, Mich., is another model-plane builder. He writes, "Enclosed is a picture of my Navion. I made it from MI's Plan No. 369. This is the first time I have used one of your plans. I found it very easy to follow. I have just started your Cessna 140 (Plan No. 380). The gal holding the model in the picture is my wife." You're another doubly lucky guy, Jason. Congratulations.



Boat fans will recognize the unusual project at the left as being an outboard-powered catamaran. Dick Oldham, of Pittsburgh, and Don Zimmerman, of McKees Rocks, both in Pennsylvania, are the proud builders. They got the idea for the boat from MI. The hulls are belly tanks and are held together with 1-in. pipe welded inside and out. The seats are made of Masonite and wood and supported by angle-iron braces wrapped around the pipe that goes through the tanks. Propulsion is provided by a 6-hp. outboard motor. Ex-GI's will immediately realize that the model for the unusual paint job was the lowly voracious shark.

Ed Beyer, of Los Angeles, has two sons: eight-year-old Tommy and five-year-old Jackie. He devoted four months of his spare time in making this midget hot rod for them. He tells us, "The boys are wonderful drivers and it's great fun to watch them whip the little car around. The materials cost a little over $100 and the car weighs 150 lbs. and stands 21 in. high. The engine is a ¾-hp. Briggs with an automatic mercury clutch. Two V-belts and pulleys give a 16 to 1 gear ratio, allowing a speed of 16 m.p.h. The frame is welded up from 1-in. tubing."

Frank M. Konrad, Jr., of Bridgeton, Mo., takes pen in hand to write, "Here is a picture of a bobsled I built recently in my spare time. It is 9 ft. long and has knee-action runners. It also has two headlights, a bell, brakes, and it steers perfectly. It has a seating capacity of five people. We had lots of fun last winter, coasting down hills at 30 m.p.h." And we bet you're having lots of fun with it this winter, too. MI is picking up the tab for a round of hot coffee (or other liquid) for you and your four passengers—we're sending you a check for $5 and a Workbench Award Certificate. How's about an invitation to go bobsledding this winter? Only one thing we'd rather do, and that is go to Florida and bask in the sun (Fla. Chamber of Commerce please note.)

Eight-Foot Play Slide

By Stephen E. MacCallum

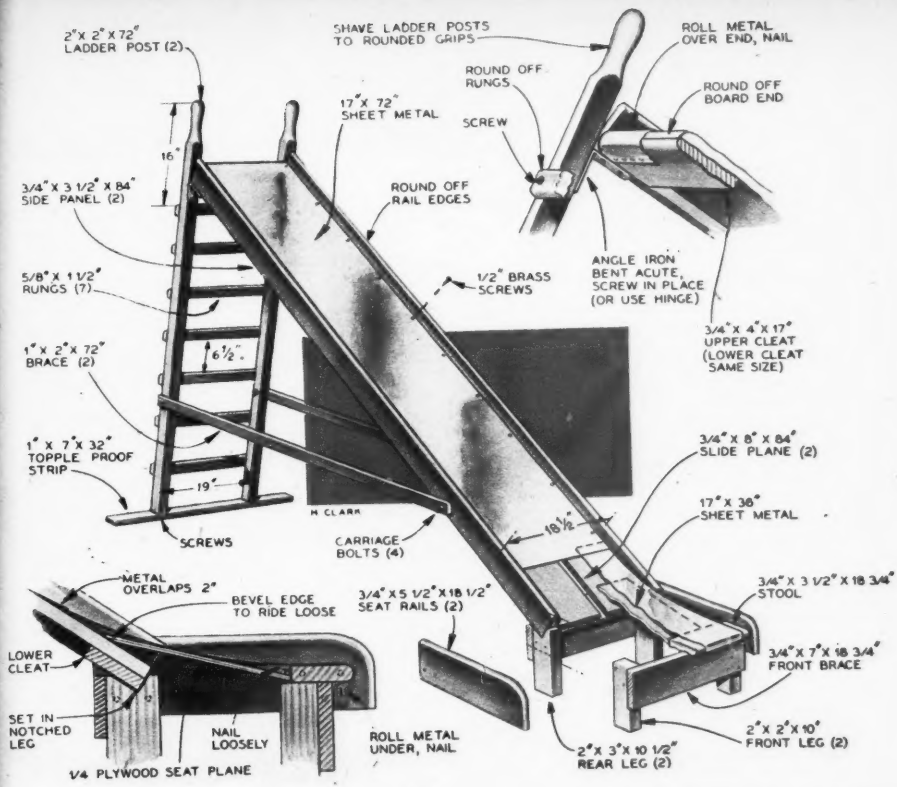
"Keeping the kids in their own back yard is easy," says MI Guy, "if you'll build them a slide."

THIS play slide made of galvanized sheet metal solves the tough problem of getting a suitable leveling-off curve at the bottom without going into an expensive and complicated construction. It is built in three sections that come apart to facilitate winter storage. Properly set up, it makes a solid back yard playground item.

The three principal parts, the sliding plane, the ladder, and the leveling-off "seat," are built as individual units. The galvanized sliding surface consists of two overlapping strips of sheet metal 17 in. wide. One piece 6 ft. long is fastened to the inclined plane assembly, the other 3-ft. section is attached to the seat assembly. The three sections are held together with two 6-ft. wooden strips for braces, four stove bolts, and two angle irons.

The sliding plane consists of two 1x8-in. boards 7-ft. long fastened at the ends by 1x4 in. cross pieces to make a base for the galvanized sliding surface. Fasten the side rails with screws and nails so the rounded upper edges of the rails form guides projecting about 2 in. above the sliding surface. The length of sheet metal fits snugly between the side rails, with the upper end rolled around the end of the wooden base and nailed underneath to the crosspiece. The side edges of the metal strip are fastened to the plank base with small brass screws set about a foot apart just inside the guide rails.

Note that this metal strip does not reach all the way to the lower end of the wooden plane. A margin of about 4 in. of metal is left free at the lower end so that the second piece of galvanized sheet, attached to the seat assembly, may be slipped underneath. •



The slide can be taken apart into three major parts, thus facilitating easy winter storage.

Because of "floating" construction, metal leveling-off seat automatically forms the correct curve.

Bronzing Baby's Shoes

How to transform your baby's first pair of walkers into a permanent keepsake.

By Ken Murray

IT is said that the electroplating of baby shoes was conceived when a Scotchman saw a suit of armor during a visit to his ancestral home. Nowadays the "metalizing" of baby's first shoes is reaching an astonishing popularity, based mostly on the permanence given such articles when they are protected against time with a coating of metal. Copper is the metal most commonly used, and it is enduring enough in itself, but for further protection and attractiveness the encasement of copper may be plated over with gold, silver or nickel. The electroplated shoes are stiff and rigid and may be displayed mounted or unmounted as permanent keepsakes.

Almost all kinds of baby shoes may be plated, including those with soft soles, creepers, and even knitted "shoes."

The shoes are first cleaned. Alcohol, and sometimes soap and water, are ordinarily used for cleaning, but the author prefers

The first step is to remove all grease and wax from the shoes with some lacquer thinner.

Support shoe on an awl and thoroughly spray it with lacquer to make it entirely waterproof.

How the conducting coating of copper bronze powder is applied to the shoes. Fine graphite can also be used but is less effective than powder.

Two methods of suspending the work in the electrolyte. Method at left is better as it does not require shifting of shoe in wire sling.

lacquer thinner. It is generally sufficient to rub the shoes with a little of the thinner on a clean cloth. Of course, if the shoes have been waxed or oiled, cleaning will have to be much more thorough.

A special grade of fast-dying water-clear lacquer is required for preparing the shoes prior to plating. Also, it is necessary to use a special bronze powder because some paint shop varieties are not suited for this purpose. By writing for the catalogs of the firms listed below, who make a specialty of plating shoes, you will be certain to receive the right lacquer and bronze powder as well as any other supplies required.

Warner Electric Co., Inc., 1512 Jarvis Avenue, Chicago 26, Ill.

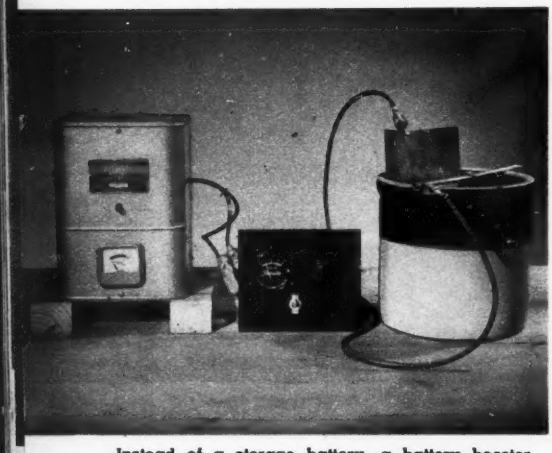
Kiktavi Co., 2111 W. Manchester, Los Angeles 44, Calif.

Craft Finishes, P. O. Box 467, Arlington, Virginia.

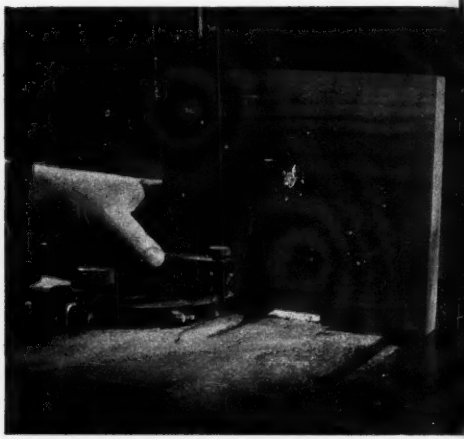
The shoes can be lacquer-hardened by dipping, brushing or spraying. It is best to thoroughly soak the leather with lacquer from the inside first, by pouring a quantity inside the shoe. Turn the shoe about in various positions so that the toe as well as other sections will be well permeated. Allow the shoes to dry thoroughly, then coat the outside with two or three applications. If the lacquer you use is heavy it must be thinned, but do not allow it to pile up on the outside so as to cover details of the shoe construction. Be particularly careful not to cover the creases and fine wrinkles of the leather which were caused when the shoes were worn by the child, for to do so would be to destroy the personality of the shoe.

Another method of suspending the work is to use a copper hook which enters hole punched in tongue.

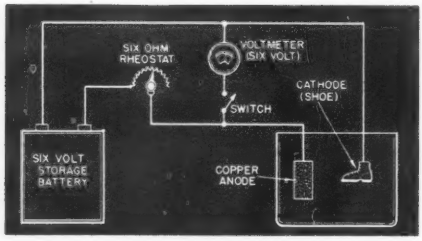
Making the plating bath. Sulphuric acid should be slowly poured into the copper sulphate solution.



Instead of a storage battery, a battery booster can be used. Crock at right accepts one shoe. A two-gallon tank will take two shoes at a time.



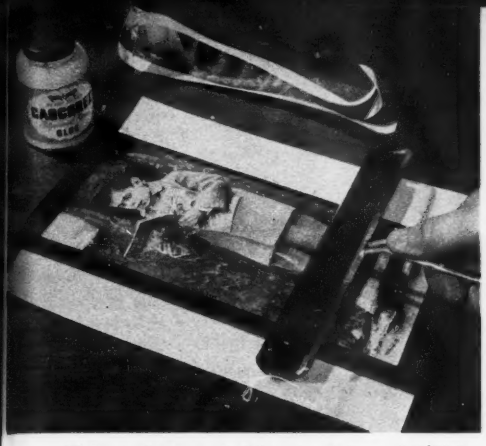
Recessing the walnut base on a circular saw. This opening will accept the bottom of photo statuette. Base is finished by lacquering and polishing.



When the first outside coat of lacquer is tacky, gently press the tied laces down so that they will adhere to the sides of each shoe. This is necessary to prevent damage after the shoes are plated, particularly during the buffing and polishing operations.

You will require some means of holding each shoe without touching it with the hands, while lacquering and carrying out subsequent operations. Use an ice pick for a handle. The hole which will be left in the back of the shoe can pass the wire for suspending it from the cathode.

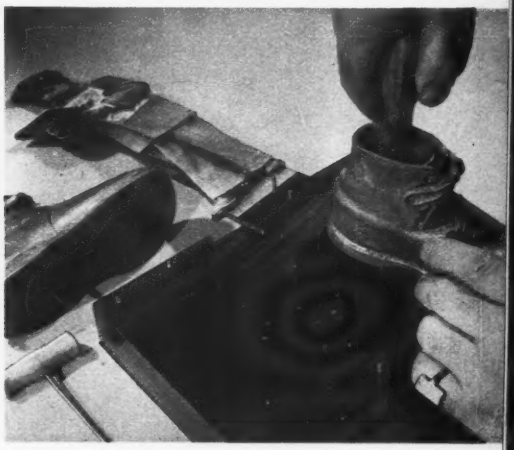
Leather will not conduct electricity, so you must first coat the surface with graphite or copper powder. This is dusted on the shoe surface after it has been made tacky. Finely powdered graphite is suitable and was the only material used for many years. Fine copper bronze powder has been found much more satisfactory because it is a better conductor. For plating baby shoes, copper powder is sold in ready-for-use form. If you use ordinary copper powder, it will first have to be washed thoroughly with lacquer thinner to remove oil and



Gluing enlargement of boy to a piece of 3/16 in. Masonite. Use a roller to assure good contact.

Cutting the photo statuette on a jig saw. If you lack this very versatile tool, use a coping saw.

A piece of felt is being glued to the bottom of base. Back of statuette is finished with green flock.



The completed shoes are mounted on the walnut base. A roundhead screw secures statuette to base.

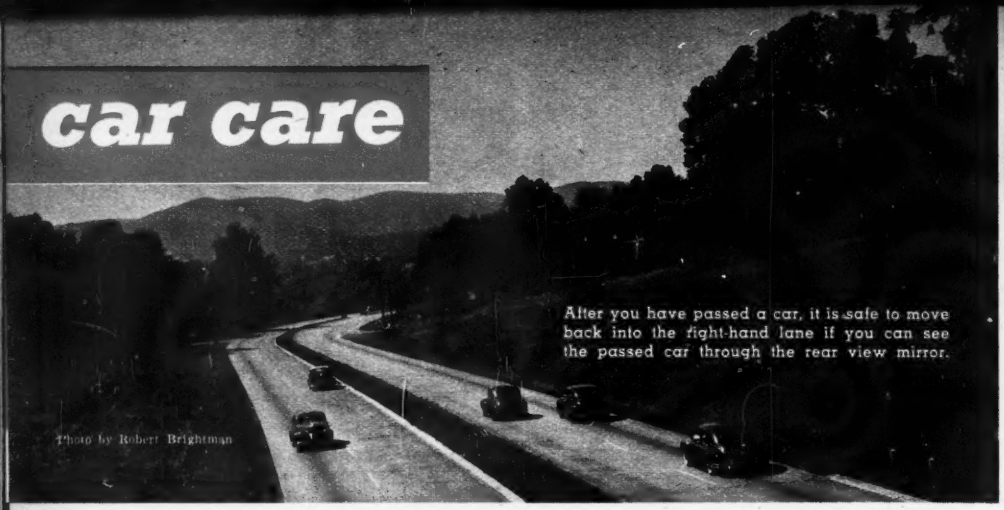
grease. The leather-hardening lacquer sold by the supply dealers is recommended by them as a good base for graphite or copper powder. Tests made by the author indicated that you may have trouble because the lacquer dries so fast that the period of tackiness is very short and critical. A more satisfactory powder base is black asphaltum (such as the Glidden brand) made into a very thin varnish with turpentine. It retains its tackiness for a longer period and, in the case of copper powder, makes easier visual examination as to complete coverage.

Give the shoe a thin but complete coating of the asphalt varnish, making sure to cover sole and lacing crevices and as much of the inside of the shoe as possible. As soon as the varnish is tacky, lightly dust on the conductive powder with a wide soft brush. Use care not to entangle the brush in the varnish. Work quickly, piling the powder on heavily. Inspect for bare spots. Allow the varnish to dry, then gently brush off the surplus powder. *Do not touch the prepared surface with the hands.*

It is necessary to weight each shoe so that it will remain underneath the surface of the electrolyte or plating solution, instead of floating to the top. A handful of glass marbles dropped inside the shoe will give it sufficient weight.

The plating process consists in connecting the work to the negative side of a direct current source and suspending it as the cathode in a tank of electrolyte. The solution consists of a copper salt, acid and water. Opposite the [*Continued on page* 126]

car care



After you have passed a car, it is safe to move back into the right-hand lane if you can see the passed car through the rear view mirror.

Photo by Robert Brightman

Baffling noises from the front end of the car can sometimes be traced to loose hood hardware. Go over the bolts with a wrench and oil moving parts.

Tune-up oils are effective in speeding up autumn starting, but remember to replace the oil filter cartridge. Solvent action of such oils may put some of the trapped sludge back into circulation again. **A strong gas odor** from the crankcase dip stick indicates dilution from excessive blowby. It may mean that the engine is being overchoked. **Head gasket failure** that isn't due to a warped head nor to carelessness in installing the gasket, may be due to excessive knocking. **New breaker points** should be rechecked after the fiber rubbing block has had a chance to wear in. Failure to observe this rule robs many a new set of points of their efficiency. Don't forget to add a few drops of oil to the wick located beneath the distributor rotor. **Better be late than The Late.....**

Rust inhibitor should always be added to the anti-freeze if ordinary alcohol is being used. Better grades of anti-freeze contain an inhibitor.

Sagging doors always bring new points of contact and squeaking. Look for bright spots and apply stainless grease pencil to check noise and wear.

behind the wheel

With Fred Russell

My 1947 Dodge has 6.50x16 tires on it, original equipment was 6.00x16 tires. Will this affect the speedometer reading? C. R. Hewitt, College Station, Texas.

Yes, about 3%.

•

Is it true that a V-8 engine with sleeve inserts will be badly damaged when overheated? Ethan A. Nelson, Axtell, Kansas.

Any engine can be badly damaged when overheated regardless of whether it is equipped with sleeves or not.

•

Will I damage my 1949 Mercury if I install 7.5 high compression heads in it? Stanley J. Boren, Washington, D. C.

You really can't tell until you give them a fair trial. Incidentally, Ethyl gas will have a higher octane rating this winter. This should help you.

•

Where can I get parts for a 1916 Stanley Steamer? O. M. Musil, Pasadena, Calif.

Write to the Sports Car Club of America, 140 West Ontario St., Chicago 10, Ill.

•

How many quarts of water are left in the block and radiator after draining? Mike Magliozzi, Boston, Mass.

If you have opened both drains, the one in the bottom of the radiator as well as the one in the rear of the engine, then no water should remain in the system.

•

What causes my 1941 Chevrolet to jump out of gear? Al Hughson, Toronto, Can.

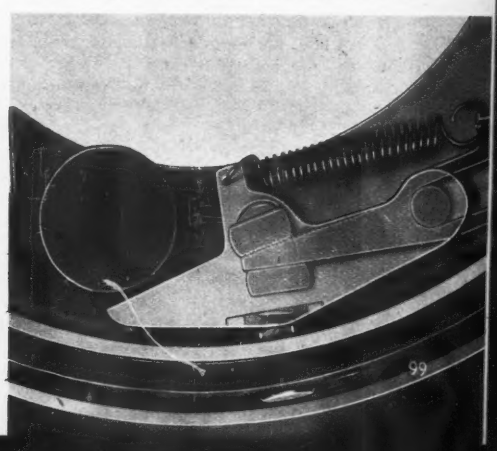
This may be due to loose motor mounts, misalignments between engine and transmission, worn shift locks or to a weak shift lock spring.

Cars use more gas when they get older. This is often due to the wear on the carburetor metering pins. Replace with new ones of original size.

Spark plugs wire running near the exhaust manifold get a terrific beating. Check for insulation cracks as these will rob plugs of hot spark.

Loose fan blades will always set up vibration and noise. All blades should have the same pitch. New Lincolns have five-bladed fans to cut noise.

Self-adjusting brakes on Studebaker have a spring-loaded plug built into face of brake shoe. As lining wears, plug moves inward drawing up lever.



Here's Walt Musciano, designer and builder of this P-6E model.

control-line

CURTISS P-6E

A 30-inch exact-scale gas model of the most famous of all "Hawks." Power with any .29-.49 cubic inch displacement engine. For sport of stunt flying.

By Walter Musciano

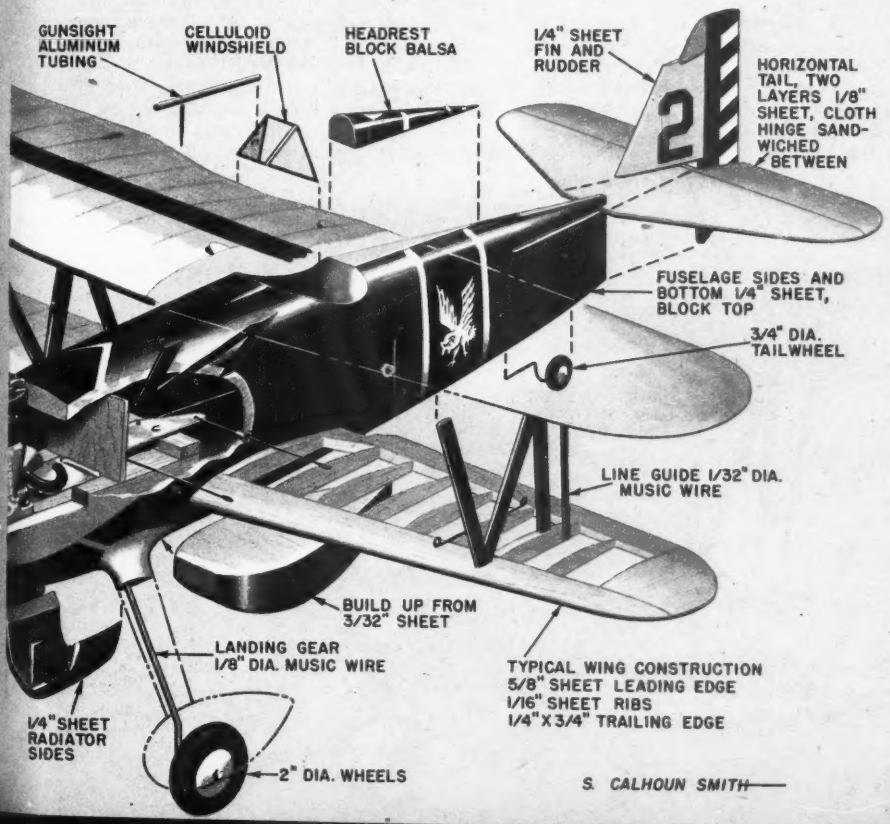
CURTISS Hawk is a name long familiar in aviation because it represents a series of fighters (called "Pursuits" before World War II) that formed the aerial backbone of both Army and Navy for well over a decade. The series started in 1935 with the Curtiss Hawk P-1 being accepted by the Army and a similar version flying for the Navy. The next four models were very similar to the P-1 and the model of the P-6 series, called the P-6E, became the outstanding pursuit of its day. The 17th Pursuit Squadron at Selfridge Field, Michigan, helped publisize this prize plane and their color scheme will go down in history as one of the most vivid.

Our model, color scheme and all, is patterned after the planes used by the 17th Pursuit Squadron. The model makes an excellent beauty event entree as well as a fine sport job. Because of its

generous wing area the P-6E will also make a good stunt job if fitted with a symmetrical airfoil and stunt tank. Engines from .29 to .49 cu. in. displacement are recommended, using glow plug ignition. However, electric ignition will operate quite satisfactory but the addition of scale detail and a fine paint job add many ounces to the total weight, which can be offset by using a glow plug. A petroleum base glow fuel was used because high power was of secondary importance. If methanol base fuel is used be sure to use a finish that is impervious to the fuel.

After the plans have been carefully studied, work can be started on the fuselage. Cut the two fuselage sides from ¼ in. sheet balsa and cement one on each side of the hardwood engine mount. While this is drying, the bulkheads can be cut out and cemented in place. Construct the stabilizer from two sheets of ⅛ in. sheet balsa with a piece of crinoline to serve as a hinge. Add the control horn and cement the stabilizer in place on the fuselage. Install the bell-crank and connect the control rod. At this time the ⅛ in. wire landing gear can be bolted to the plywood support. Test the controls and cover the fuselage bottom with a soft balsa block and ¼ in. sheet as shown. The fuselage top and nose are also covered with soft balsa blocks. Carve and sand the fuselage to shape after the blocks are securely cemented together. During the carving process, check the fuselage cross-

Head-on view. Landing gear strut is cut to absorb shock. Three-bladed prop is optional



S. CALHOUN SMITH

FULL SIZE PLANS

will simplify building and insure an accurate model. Send 50c for your set to: MECHANIX ILLUSTRATED Plans Service, Fawcett Building, Greenwich, Conn. Please specify Plan No. 408.

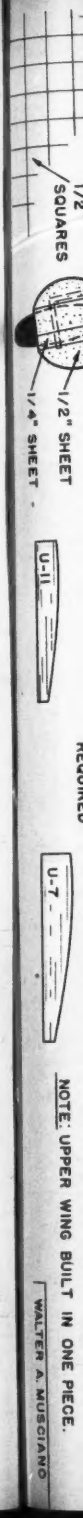
section for the correct shape by using a cardboard template.

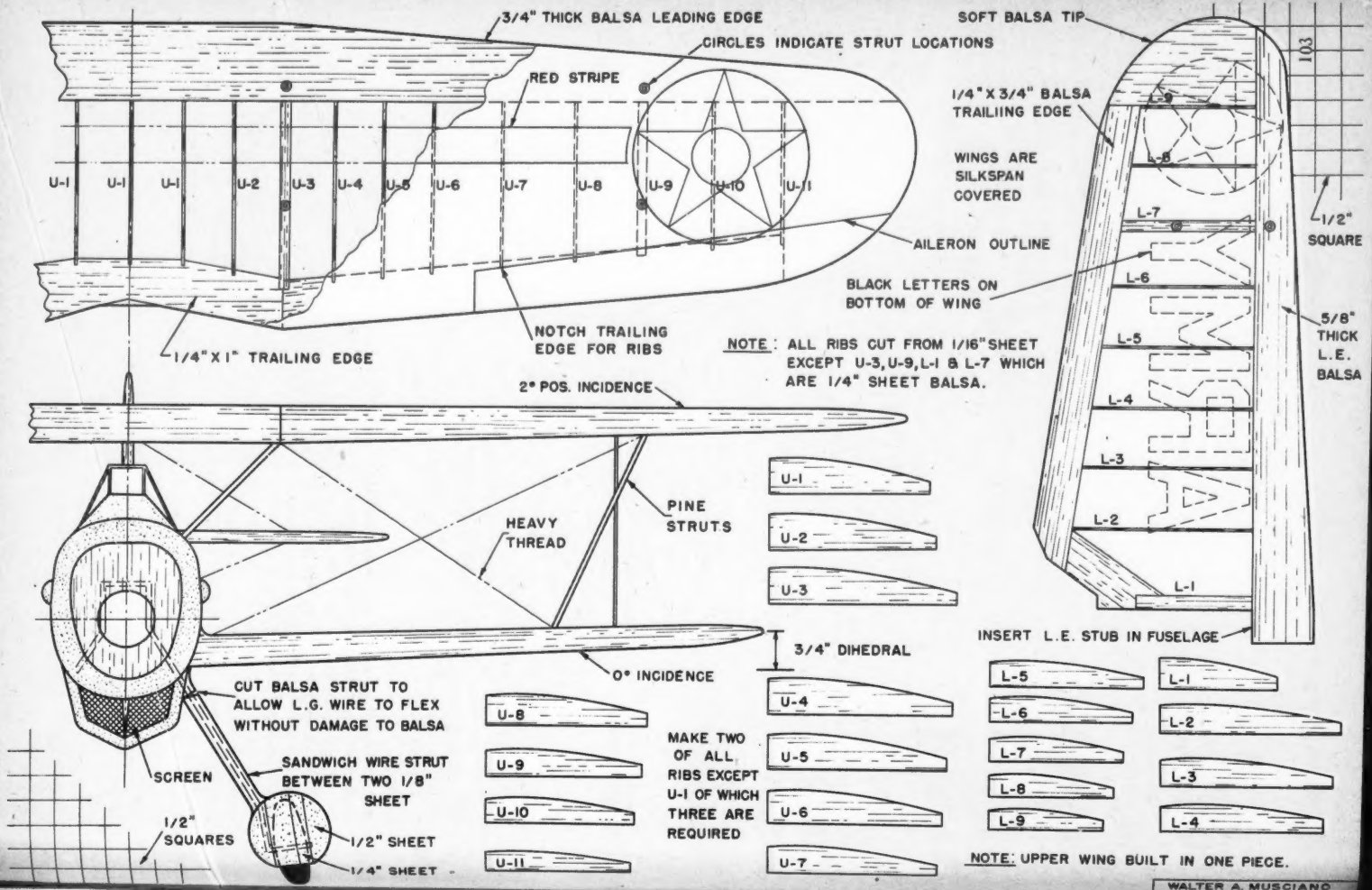
The wings are made with a heavy leading and trailing edge and are covered with GM Silkspan. Cut the ribs from $\frac{1}{16}$ in. hard sheet balsa and taper the leading edge as shown in the front view. Now pin down the upper leading edge on your workbench. Because of the built-in dihedral you will find that only one half of the wing can be made at one time. Pin the ribs in place and then install the trailing edge by fitting the ribs in the notches. The wings should be constructed directly over the plan with a layer of waxed paper in between so the cement will not stick to the plan. The lower wing is constructed in two halves in the same manner. Be sure to install the root rib on the lower wing at the indicated angle in order to obtain the correct amount of dihedral. When the wings have been trimmed to the Clark Y airfoil shape (unless you plan to use your model for stunting, in which case a symmetrical airfoil is necessary) cover the surface with silkspan and apply four coats of clear dope. Sand lightly after each coat has dried. Finish by applying three coats of yellow dope.

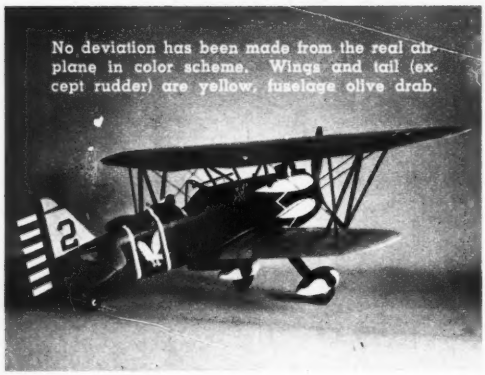
Cut the landing gear fairings from the stock specified on the plans and cement to the strut after the wheels are in position. When this is dry the fairing can be cut to shape and sanded smooth. Using a sharp razor, cut the strut at the point indicated and bevel the edge as shown. This operation is necessary to allow the landing gear to flex without causing damage to the fairing. The fin and rudder are cut from ¼ in. sheet stock and after sanding to shape they are cemented in place. Add the tail wheel as the plan indicates, using plenty of cement.

Apply two coats of clear dope to the fuselage and tail surfaces and sand thoroughly with 00 sandpaper. Follow by applying three coats of wood filler with wet sandings between coats. The entire tail assembly, except the rudder, is yellow. Paint the struts and attach to the upper wing. The fuselage should be now painted before the wings are attached. Apply the white paint first on the nose, landing gear and body where required. This coat does not have to be carefully applied as long as it covers the area required. When dry, mask off the color and proceed with the olive drab which in turn is masked and the black dope then applied. The lower wing can now be cemented to the fuselage by inserting the leading edge stub into the fuselage side. Make sure the wing is set at the proper dihedral angle. The upper wing with struts attached is now cemented in place. The struts should be pushed into the fuselage and lower wing about $\frac{3}{16}$ in. in order to obtain a strong joint. Rigging wires made from heavy grey thread and a windshield

Beautifully finished, the original model won many local beauty events. Power was a McCoy SPORTSMAN.



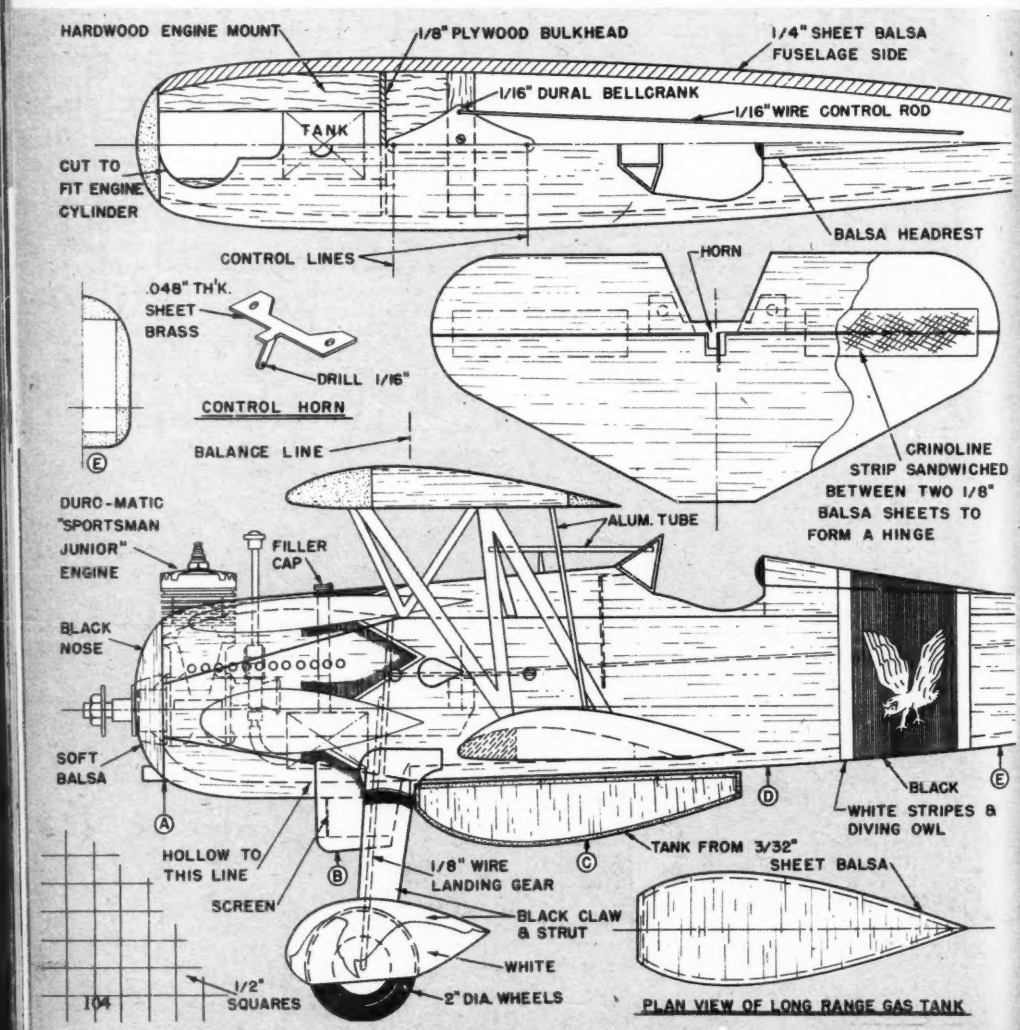

3/4" THICK BALSA LEADING EDGE
CIRCLES INDICATE STRUT LOCATIONS
RED STRIPE
U-1
U-1
U-1
U-2
U-3
U-4
U-5
U-6
U-7
U-8
U-9
U-10
U-11
AILERON OUTLINE
NOTCH TRAILING EDGE FOR RIBS
1/4" X 1" TRAILING EDGE
NOTE: ALL RIBS CUT FROM 1/16" SHEET EXCEPT U-3, U-9, L-1 & L-7 WHICH ARE 1/4" SHEET BALSA.
2° POS. INCIDENCE
HEAVY THREAD
PINE STRUTS
0° INCIDENCE
3/4" DIHEDRAL
CUT BALSA STRUT TO ALLOW L.G. WIRE TO FLEX WITHOUT DAMAGE TO BALSA
SCREEN
SANDWICH WIRE STRUT BETWEEN TWO 1/8" SHEET
1/2" SQUARES
1/2" SHEET
1/4" SHEET
MAKE TWO OF ALL RIBS EXCEPT U-1 OF WHICH THREE ARE REQUIRED
SOFT BALSA TIP
1/4" X 3/4" BALSA TRAILING EDGE
WINGS ARE SILKSPAN COVERED
BLACK LETTERS ON BOTTOM OF WING
1/2" SQUARE
5/8" THICK L.E. BALSA
L-9
L-8
L-7
L-6
L-5
L-4
L-3
L-2
L-1
INSERT L.E. STUB IN FUSELAGE
NOTE: UPPER WING BUILT IN ONE PIECE.
WALTER A. MUSCIANO



No deviation has been made from the real airplane in color scheme. Wings and tail (except rudder) are yellow, fuselage olive drab.

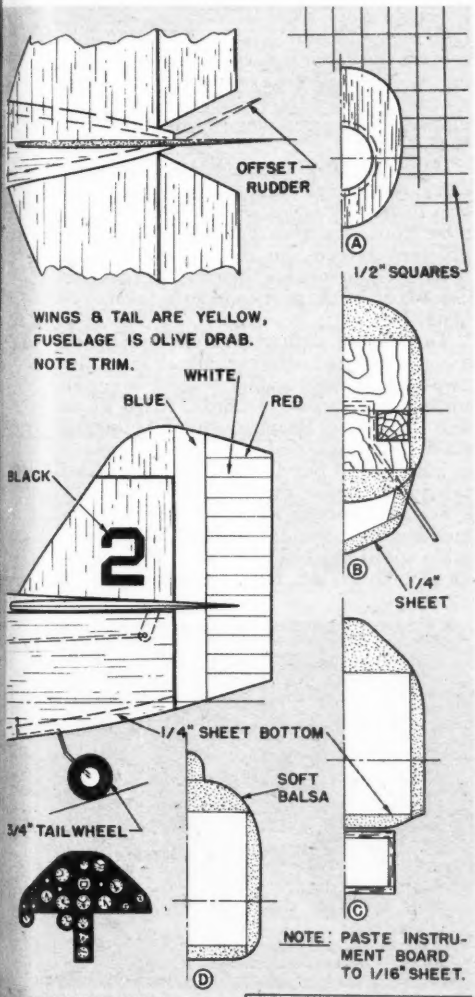
from celluloid add the final touch to construction. Black decals are used for the U. S. Army lettering on the bottom of the lower wing but it may be difficult to obtain the old style army insignia. If you can't find a decal, paint on the insignia.

The auxiliary gas tank is optional and, if omitted, the plane, will still adhere to scale. The full scale airplane was equipped with a three-bladed propeller and therefore an X-cell three-bladed prop was used on the model with excellent results. Pitch was 10 in.; diameter 9 in. In order to provide access to the engine and tank, the forward upper portion

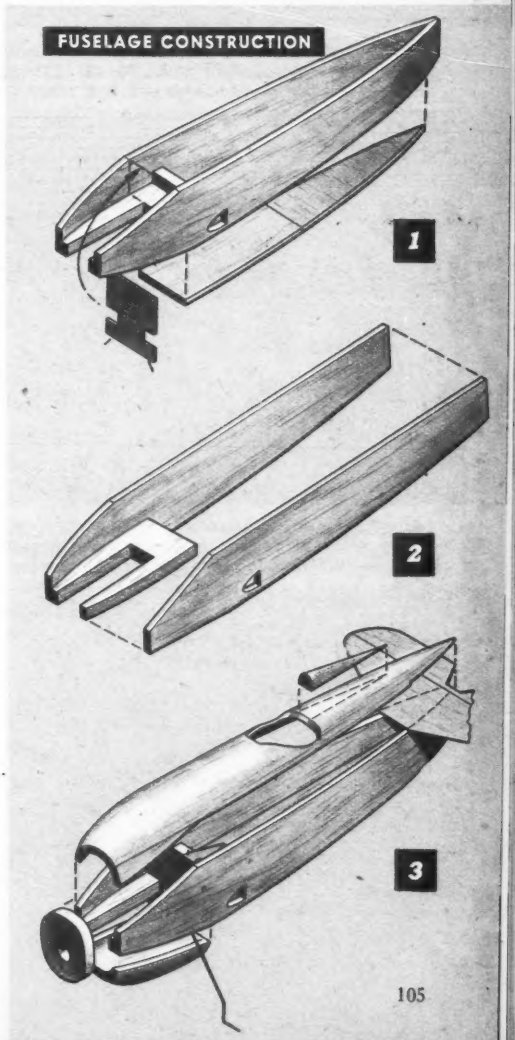


of the fuselage should be removable. Large dress snaps can be used to hold this hatch in place. If you intend to install an ignition system in your model, center it beneath the bellcrank and cut away the bottom of the fuselage to permit easy access to the coil and batteries. Medium batteries in a regular metal battery box (obtainable from your local hobby shop) are recommended.

Be sure the model balances at the point indicated on the side view of the plans before any flying is done. Select a smooth surface for the flying site because the wheel pants are bound to snag in grass no matter how short it is cut. Flights are most enjoyable when flying from sixty-foot lines. However, if a smooth take-off area is not large enough to accommodate lines of this length, the author recommends a Jim Walker U-Reely control handle. With this device the model can take-off on short lines and when in the air the lines can be lengthened, and at the end of the flight the model can be reeled in and landed. Use considerable power at all times in order to avoid mushing and loss of control. The rudder should be offset to cause the model to fly against the pull of the flying wires, this will insure taut lines at all times. If built and flown with care you are bound to have countless hours of flying enjoyment with this replica of a truly famous and historical airplane. •

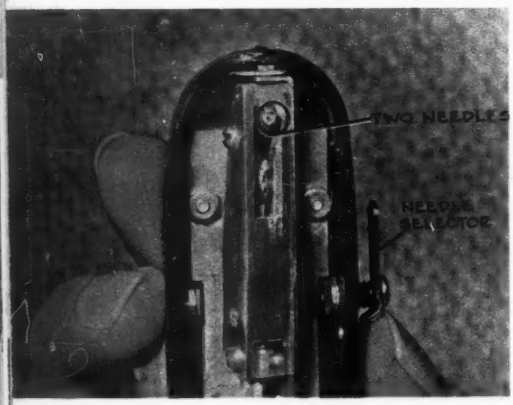


WALTER A. MUSCIANO

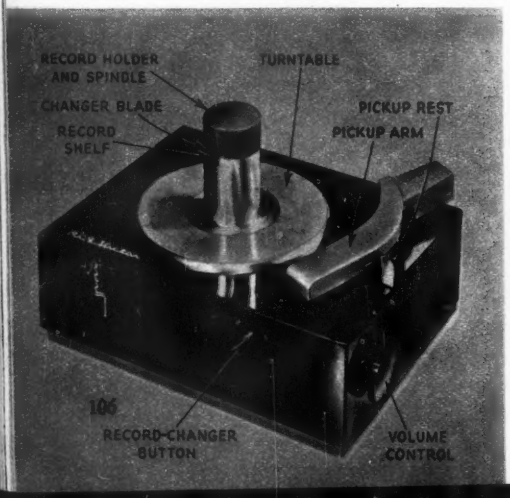


the music goes 'round and 'round

CBS-star Arthur Godfrey compares the new 7-inch Microgroove record (left) with the old 12-inch "standard" record. Both play for five minutes.



Above: Typical double tone arm that plays all three types of records is Sonotone's "Titone." Below: RCA-Victor's 45-r.p.m. record changer.



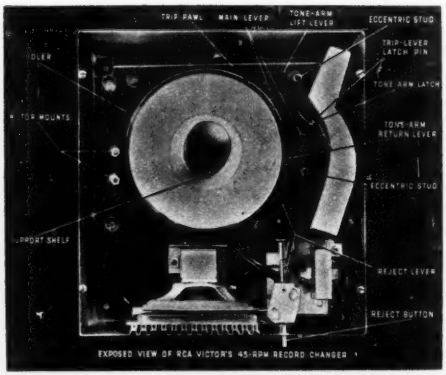
BUYING phonograph records used to be a simple and painless operation. You could walk into any music shop and say, "I want a few of the latest dance tunes for a party." You'd depart in a few minutes with a neat bundle under your arm. But not any more!

"Phonograph records? Yes, sir," the clerk now says. "Would you like 10- or 12-inch records for a 78-r.p.m. turntable, or 7-, 10-, or 12-inch records for a 33⅓-r.p.m. machine, or 7-inch records for a 45-r.p.m. player? The prices range from 60 cents to $4.85."

If this jumble of figures doesn't make you dizzy, a demonstration of the three different turntable types certainly will. And after you have seen and handled the six different records, in colors ranging from bright red to somber black, you may decide to cancel the party and go to the movies instead.

The slightly delirious record industry is a big business. Last year, about 15 million owners of phonographs bought approximately 250 million records. RCA-Victor and Columbia Records, the two biggest producers in the industry, are engaged in an undeclared but active "trade war" with this juicy market as the prize.

For as far back as most of us can remember, the standard phonograph turntable speed has been 78 r.p.m. A player of any make would take records having a



EXPOSED VIEW OF RCA VICTOR'S 45-RPM RECORD CHANGER

People who like phonograph music are getting dizzy trying to keep up with three different systems of playing three sizes of disks.

By Robert Hertzberg

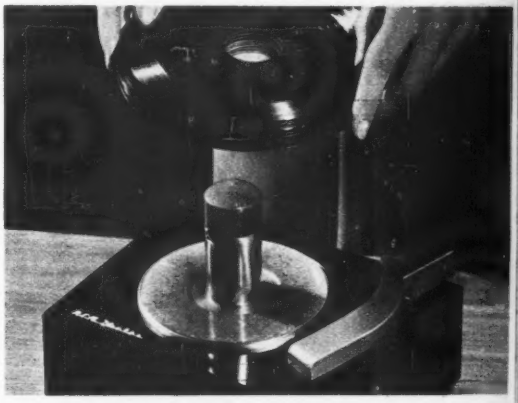
diameter of 10 or 12 inches. These sizes have maximum playing times of 2½ and 5 minutes per side, which are adequate for popular selections and dance music but, of course, much too limited for long classical works. To eliminate the bother of changing disks manually when a symphony was being played, manufacturers brought out automatic record changers. Some of these machines must have been designed by disciples of Rube Goldberg. They are weird contraptions with flailing arms and complex gear trains, they have a tendency to wreck the records, and they're out of order about half the time.

Last year, Columbia Records, Inc., a wholly owned subsidiary of the Columbia Broadcasting System (keep that little fact in mind), made a big splash with the first really important improvement in phonograph records in almost half a century: a new 12-inch record that turns at only 33⅓ r.p.m. and plays for a maximum of about 22½ minutes. Coincidentally, it brought out a 10-incher that runs for 13½ minutes and a 7-inch baby that last 5 minutes. The smallest one is thus equivalent to the old 12-inch, 78-r.p.m. disk.

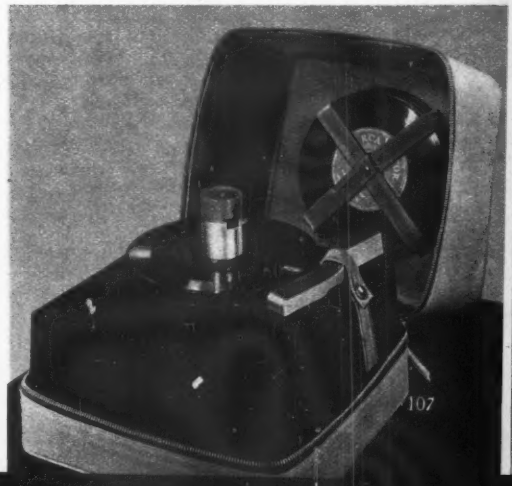
"What about those 45-minute records I read so much about?" you ask. The 12-inch, 33⅓-r.p.m. disk *is* the 45-minute record, *played on both sides*. That expression "45-minute record" was used a bit loosely in the initial advertising and publicity. You had to read down into the fine print to learn that the figure represented two sides, not one. At that, more than a third of an hour of uninterrupted music is a lot of music, and Columbia's LP (for *long-playing*) Microgroove records were a quick success.

The word Microgroove explains the secret of the new disks. As you probably know in a general way, a phonograph transcription consists of a wiggly spiral cut into the face of a flat plastic disk. A sensitive needle, attached [*Continued on page* 128]

In this picture, one record is being played on the RCA-Victor player. Others are stacked above tone arm. Box held by model is a complete album.



Simplicity of the RCA-Victor automatic changer-turntable for 45-r.p.m. records is evident here. A stack of six records is being put on spindle.



Right: The compact construction of the RCA-Victor player makes it readily portable. This pigskin carryall holds the player itself and 30 records.

SHOP SAFETY

You have but two eyes—two hands—10 fingers. Can you spare them?

By Robert Hertzberg

HOLD up your hands in front of you and count your fingers. Now ask yourself, "How many of these can I afford to lose?"

Go look into the nearest mirror. . . . Look closely. . . . Get your nose right up against the glass and stare directly into your eyes. Now ask yourself, "Can I spare one of these?"

Repeat these performances daily for about a week. By that time you should have convinced yourself that your fingers and eyes are practically indispensible. Then you'll be careful every time you pick up a tool or flip on a motor switch.

The important thing is to acquire good shop habits—you might check your's against those shown in the accompanying pictures.

Safety in the shop—like safety when swimming, driving, or shooting—is a matter of common sense. I was going to say "horse sense," but no horse in his right mind would dream of using a power grinder without wearing a pair of blinkers. . . . Oops, beg pardon! I mean a pair of well-fitting shatterproof glasses with sideboards.

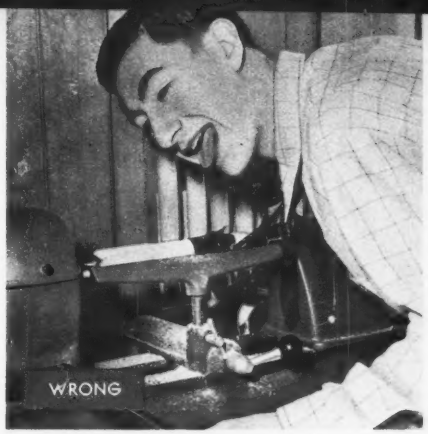
The steel particles that are ground off a lathe bit or chisel by a carborundum wheel turning 57 revolutions per second are hot and sharp. You can comb 'em out of your hair and shake 'em out of your clothes, but you can't blink 'em out of your eyes. So the first rule of shop safety is to wear shatterproof glasses for all grinding, buffing, polishing, and similar high-speed operations.

If you wear glasses for correction of vision, perhaps you'll prefer a hood of the type made popular by girl welders during the war—they're available from most tool and hardware dealers.

Protective glasses are usually not needed for woodworking operations—wood chips are relatively light and soft. The safety problem with woodworking machines is a matter of everlastingly keeping out of the way of the high-speed cutting surfaces.

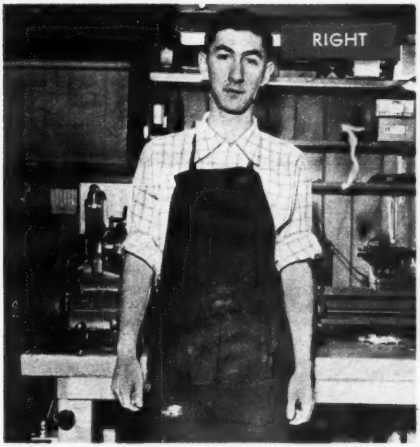
Study these pictures carefully. If your initial reaction is, "This is beginner stuff," again count your fingers and eyes. 'Nuff said? •

Proper stance for wood turning: no loose clothing to get caught, left hand guides chisel, right swings tool, shavings fall to the machine bed.

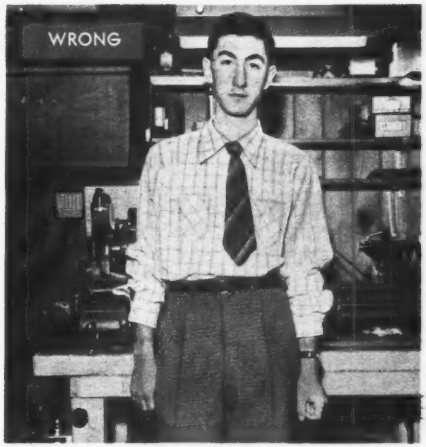


Funny? Not if it happens to you. This is what comes from turning while wearing regular clothes. Before you know it, you're tied up in your work.

Ready for an evening of shop enjoyment: no tie or jewelry, sleeves rolled up to the elbow, an apron adequately protects good shirt and pants.

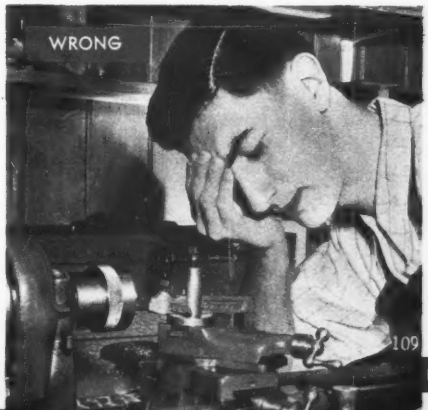


You look sharp for a party, chum, but not for a workshop session. The tie, key chain, sleeves, and wrist watch are easily snagged accessories.

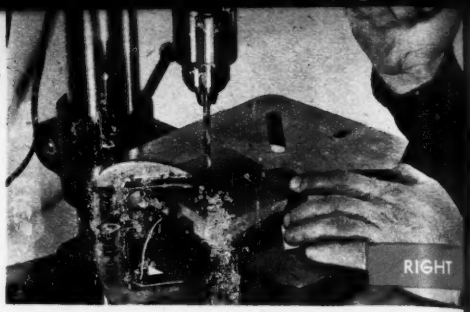


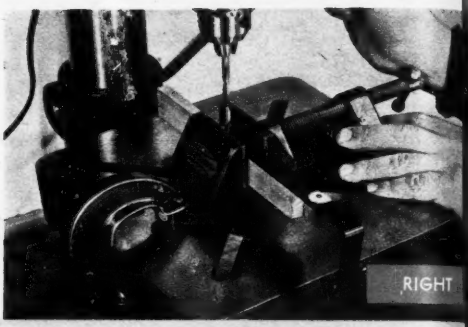
With safety glasses, you can really get up close to see how a tool is biting—you'll just blink a bit when the hot chips hit against the lenses.

He thought a quick look wouldn't do any harm; so he didn't put on his glasses. The result? A hot chip in the eye. NEXT time he'll wear glasses.



MORE



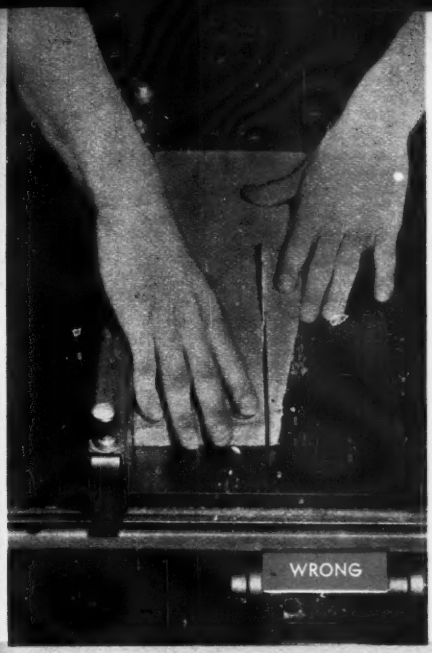


The whole trick in drill-press safety is adequate clamping of the work. If work isn't held down, it'll surely slip and become a flailing weapon.

Special drill-press vises and common clamps will prevent acident shown at left. Scrap wood under job lets drill go through without nicking table.

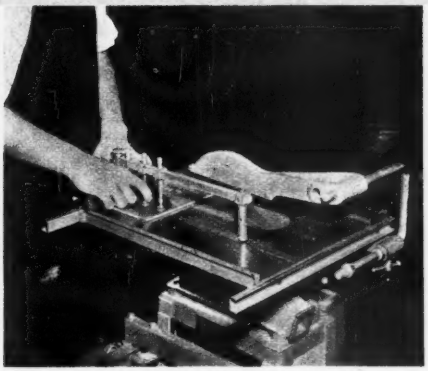
Above: Changing circular-saw blades takes care because the teeth are sharp. Jam a stick between teeth and table frame to keep saw from turning.

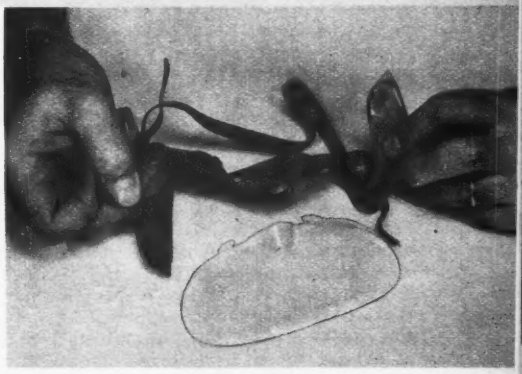
Above left: We admit MI is fascinating, but this character is making two mistakes that may cost him a couple of fingers. First, he's paying no attention to that rapidly revolving saw blade. Second, he's holding the work incorrectly. Left: The right way to hold a crosscut job: hands well away from blade, body not in front of machine.



Quick way to lose a fingertip or a thumb. And never, never stand directly behind the work when ripping—wood, when kicked back, can cripple you.

When ripping, always use the guard with its kerf splitter and anti-kickbacks. Stand to one side of work. Use push sticks to guide the material.





Using an abrasive wheel to cut metal calls for a pair of tight goggles, a holddown attachment on the miter gauge, and a guard over the abrasive. Above right: Here is a new type of eye protector.

The Willson MonoGoggle combines the unobstructed vision of a hood with the convenience and light weight of spectacles. The one-piece goggle fits in a flexible headband. Right: The goggle-type protector can be worn over ordinary eyeglasses, so good sight with safety is allowed everybody.

ARROW — a fast outboard runabout

Length—13'-1" **Beam—4'-10"** **Weight—about 450 lb.**
Power—10 to 33 hp. **Speed—20 to 35 m.p.h.**

By Jack Williams

ARROW is fun to build and use. Fast, safe, highly maneuverable, and sporty looking, she is designed to be used with any outboard motor from 10 hp. up to one of the big 33-hp. jobs. With 10 hp. she does 20 m.p.h. and with 33 hp., about 35 m.p.h.

The first step in building her is to study the accompanying bill of materials and collect the various items listed. For a really attractive job, use mahogany plywood on the deck and sides. The increase in over-all cost will be slight, but the added beauty of the boat will be great. This material is available from the Ipik Plywood Co., Kenner, La. Fir, birch, or gum plywood should be used for the bottom (only the resin-bonded, waterproof variety is to be employed).

Saw the building form to shape from a piece of two-by-ten. If future boats are to be built from this design, retain the building form—any number of boats can be erected on it. Mount it upon sawhorse-like legs at any convenient working height.

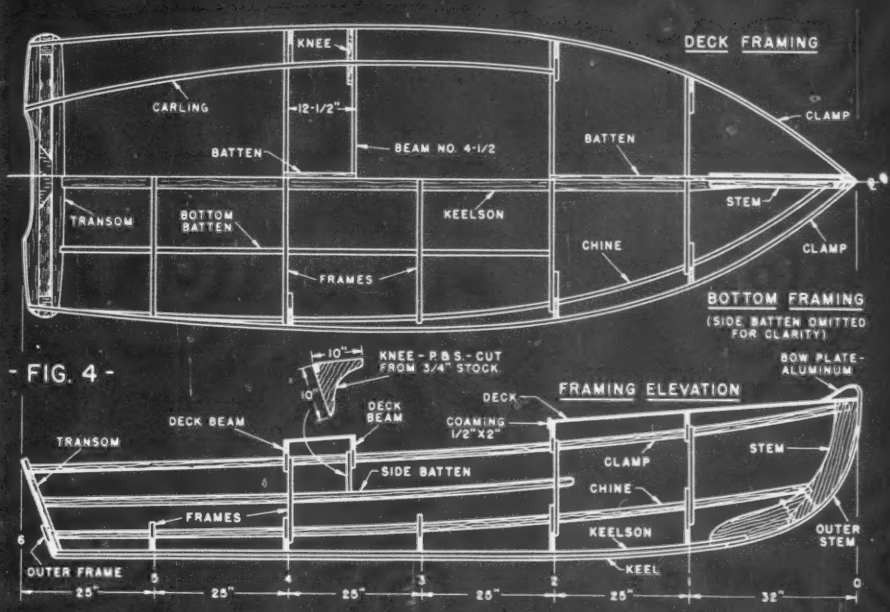
Continue by drawing full-size paper patterns of the stem, the transom, and all the frames. Shapes are transferred from these patterns to the stock by laying the paper on the material and, using a large pin, pricking along the outlines.

The two-piece stem is sawed to shape and assembled with two ¼x4½-in. carriage bolts. Counterbore the forward edge to take the heads of these bolts.

After sawing the transom from ½-in. plywood, cut out the pieces that make up the transom framing and secure the plywood to the framing with resin glue and 1-in. No. 8 flathead wood screws. The outer bottom frame shown in the drawing (Fig. 3) is not attached until later.

Cut out all the frame members and assemble Frames 1, 2, and 4, using resin glue and 1¾-in. No. 8 screws at the joints. Don't add the deck beams yet.

Next, cut the notches in the frames and transom for the keelson, chines, and clamps, and in the stem for the keelson. The notches in the transom for the clamps go through the framing but not through the plywood;



- FIG. 4 -

those for the keelson and chines go all the way through both framing and plywood.

When the hull is completely framed, the exposed transom notches are covered by the previously mentioned outer bottom frame, which is glued to and screw-fastened through the plywood.

All frames, the transom, and the stem are now placed in their respective notches atop the building form. Square the frames and transom up and hold them in position with wooden strips nailed in place. Secure the stem to the building form with two short pieces of one-by-four and clamps.

Bend the keelson into place and attach to the stem, transom, and frames with two 1¾-in. No. 8 flathead wood screws at each joint. To keep the structure from twisting out of shape, install the two chines simultaneously, starting at the transom and working forward. Bevel the ends of the chines to fit the sides of the stem. Secure with one 1¾-in. No. 8 flathead wood screw at each joint. Using the same procedure, install the clamps.

Clamp the side and bottom battens in place roughly where shown and mark the frames and transom for the notches. Remove the battens and cut the notches; then secure the battens with one 1¾-in. No. 8 flathead wood screw at each joint.

Using a plane and a wood rasp, the entire framework is now trimmed and faired so the plywood covering will lie evenly at all points.

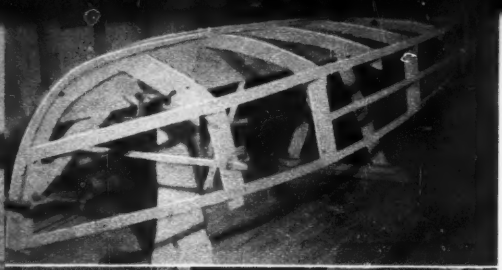
When applying the planking, use non-hardening marine glue at the keel, chine, and transom joints and resin glue at the planking butts, at the stem, and along the clamps.

The bottom is planked first. Lay the plywood sheets in place, butting them at the center line. Mark along the chines, remove, and cut to shape. Coat the edges of the transom, keelson, and chines with glue, lay cotton wicking in the glue, and secure the plywood with 1-in. No. 8 flathead wood screws on 2-in. centers.

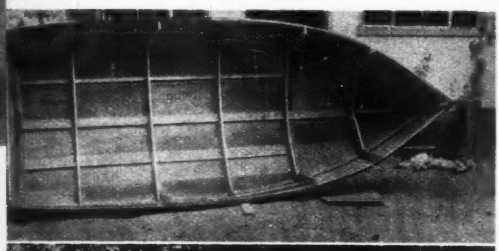
The two pieces at the forward end must be carefully shaped to fit the stem. A seam batten, as shown in Fig. 5, is installed to back the joint between these pieces and the after ones. To aid in bending the plywood in place at the stem, soak it in hot water before applying.

With the bottom planked, trim all edges, clamp the side planking in place, mark it, remove, and cut to shape. It is secured with glue at all joints and screws at all joints except those along the clamps, where shingle nails are driven and clinched inside the clamps.

The exposed edges of the plywood along the stem are covered with a screw-fastened



Using a plane and a wood rasp, carefully trim and fair the entire framework so the plywood planking will lie evenly and touch all the frame surfaces.



After adding the plywood planking, turn the boat rightside up and complete by installing the deck beams and battens, carlings, decking, and trim.

BILL OF MATERIALS

(Approximate Quantities Required)

Waterproof Plywood

Deck: 3 panels, 1/4" x 4'-0" x 7'-0"
Sides: 2 panels, 1/4" x 4'-0" x 8'-0"
Bottom: 3 panels, 3/8" x 4'-0" x 8'-0"
Transom: 1 panel, 1/2" x 20" x 5'-0"

Common Lumber

Building Form: 1 piece, 2" x 10" x 12'-0"

Specify that all wood listed below is to be used for boat-building and is to be air dried to a maximum of 15% moisture content. All hardwood is to consist of first, second, and select grades only. All softwood is to consist of A and B grades only.

White Oak or Longleaf Yellow Pine

Strips: 4 pieces, 1/2" x 3/4" x 14'-0"
Outer Stem: 1 piece, 1/2" x 1 1/2" x 4'-0"
Deck Batten: 1 piece, 1/2" x 2" x 6'-0"
Carlings: 2 pieces, 3/4" x 1 1/4" x 10'-0"
Clamps and Moldings: 4 pieces, 3/4" x 1 1/4" x 14'-0"
Side Battens: 2 pieces, 3/4" x 1 1/2" x 10'-0"
Keel: 1 piece, 3/4" x 1 1/2" x 12'-0"
Bottom Battens: 2 pieces, 3/4" x 1 3/4" x 10'-0"
Chines: 2 pieces, 3/4" x 2" x 14'-0"
Keelson: 1 piece, 3/4" x 3 3/4" x 12'-0"
Frames, Deck Beams, and Knees:
1 piece, 3/4" x 3" x 24"
1 piece, 3/4" x 4" x 5'-0"
1 piece, 3/4" x 5" x 5'-0"
1 piece, 3/4" x 5 3/4" x 5'-0"
4 pieces, 3/4" x 12" x 6'-0"
1 piece, 3/4" x 14" x 2'-6"
Stem: 1 piece, 2" x 8" x 3'-6"

Mahogany or White Pine

Cockpit Coamings: 2 pieces, 1/2" x 2" x 12'-0"
Seats: 3 pieces, 3/4" x 2 1/4" x 12'-0"
2 pieces, 3/4" x 3 3/4" x 8'-0"

Fastenings

2 gross galvanized 3/4" No. 6 flathead wood screws
5 gross galvanized 1" No. 8 flathead wood screws
6 dozen galvanized 1 3/4" No. 8 flathead wood screws
1 pound galvanized 1 1/4" shingle nails
2 galvanized 1/4" x 4 1/2" carriage bolts

Miscellaneous

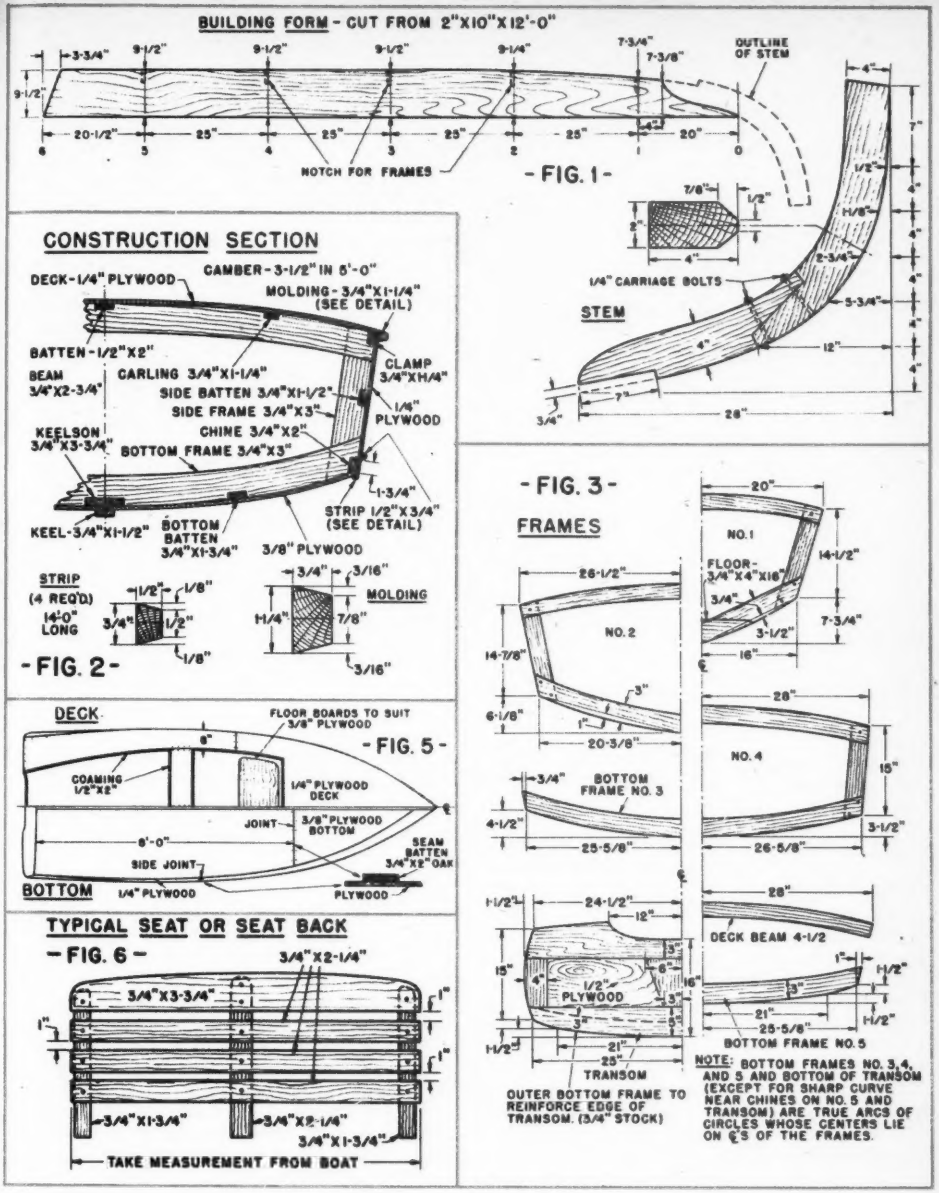
1 ball cotton wicking
1 pint resin glue
1 pint nonhardening marine glue
Paint and varnish to suit

outer stem. Secure the keel in place with 1 3/4-in. No. 8 screws on 8-in. centers. The four strips go on next, fastening the upper ones from the inside and the lower ones from outside with 3/4-in. No. 6 screws on 8-in. centers.

Remove the hull from the form, turn rightside up, and install the deck beams. Beam 4 1/2 is supported by screw-fastened sawed knees. Continue by notching the carlings and deck battens into the beams and securing with one 1 3/4-in. screw at each joint.

Mark the plywood decking to shape, cut out, and secure with 3/4-in. screws on 3-in.

Apply at least three coats of paint or varnish inside and out. The finished boat will surprise you with its speed, maneuverability, and looks.



centers. Trim the cockpit openings with coamings and the exposed edges along the sheer with the moldings detailed in Fig. 2, fastening them with 1¾-in. screws on 8-in. centers. Add the seats and flooring and you're ready to paint and varnish. This depends upon individual preference, but be sure to apply at least three coats inside and out. •

LARGE-SCALE PLANS

will greatly simplify construction. Send $1 to MECHANIX ILLUSTRATED Plans Service, Fawcett Building, Greenwich, Connecticut. Please specify Plan No. B-165.

Add to the beauty of your home with a well-designed concrete driveway.

Pour Your Own Driveway

By Robert Scharff

NEVER underestimate the importance of your driveway. It should be both functional and esthetic. Functionally, it provides a surface across the space between your garage and the nearby public road on which you can run your car without digging ruts in your lawn or denting the fenders, flattening the exhaust pipe, scalloping the running boards, or scraping the sides of said car. Esthetically, it should be pleasing because it is the introduction to your home—the first thing a visitor sees and judges you by.

It should be as straight as circumstances permit, for curved driveways are somewhat difficult to negotiate, particularly when backing up on dark nights. An eight-foot width is adequate for straight runs, but this should be increased to 11 feet if the drive has any turns. Minimum widths and radii for most conditions are shown in Fig. 1.

If possible, allow enough space when laying out your driveway to turn your car around. This is especially desirable if your home is on a busy street where backing out into heavy traffic is a dangerous operation. Typical driveway designs incorporating turning areas are suggested in Fig. 2.

If the thought of wasting valuable yard space on such a turning area bothers you, think of the three additional advantages that it offers. First, it provides space for off-the-street parking for visitors. Second, it can be fitted out as a play court for the children—a backboard at one side will turn it into a fine basketball court and it can be marked off for shuffleboard, deck tennis, and other games. And third, if you are strictly the hammock-and-cool-drink type to whom lawn-mowing is a nauseating chore, the turning space will appreciably cut down the number of square feet of grass that you'll have to barber regularly.

When the garage is at the back of the lot and the driveway must run very close to the house, keep at least 2½ feet clear between drive and house and increase the width of the drive to at least nine feet.

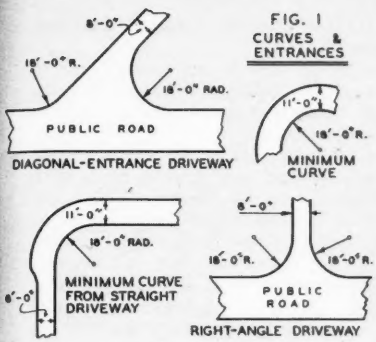
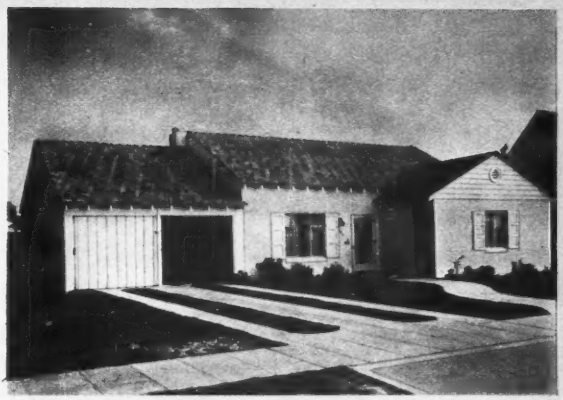


FIG. 1
CURVES & ENTRANCES



Where a driveway is not subject to constant use, parallel concrete strips provide cheap but satisfactory approaches.

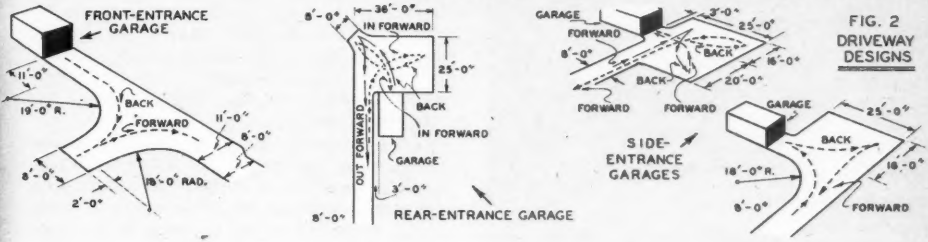


FIG. 2
DRIVEWAY DESIGNS

If the driveway is narrower than this, you will be in constant danger of scraping the house or damaging shrubbery and trees as you drive in and out. Also, these minimum dimensions will allow dual-wheel fuel trucks to get in for deliverys.

Mention of shrubbery and trees brings to mind one precaution that is extremely important. No foliage should be present to block your vision as you leave your premises. This means that hedges should be kept trimmed to a maximum height of about four feet and, in extreme cases, even that offending trees should be uprooted and removed.

Grade is another important factor. If the change in grade is too sudden, your car may scrape bottom as it passes over the hump. If the pitch is too steep, winter ice and snow may render your car unmanageable. A grade of more than 10% is considered excessive by most authorities. Fig. 3 presents the picture graphically. A level stopping place of about a car's length should be provided both in front of the garage and next to the street as a matter of safety.

Now to the actual work of constructing a driveway. Proceed with the layout as shown in Fig. 4. Drive stakes at points A and B, which should be at least five feet from the property line. Stretch a cord between stakes. Next, measure off the width of the driveway and set stakes C

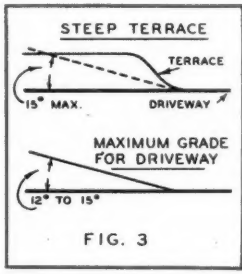


FIG. 3

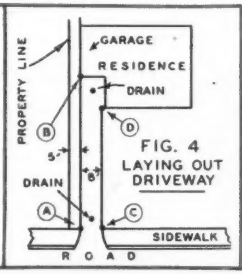


FIG. 4
LAYING OUT DRIVEWAY

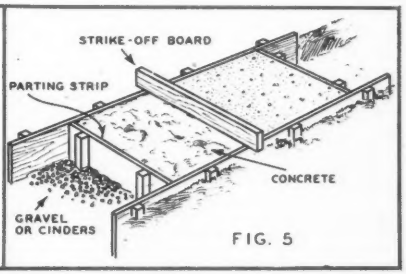
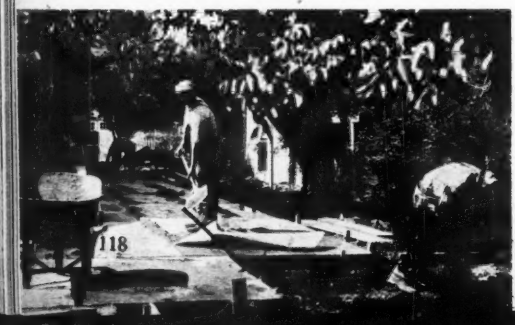


FIG. 5

Tamp down 6-in. base coat of gravel or cinders so 5 in. is left between it and tops of the forms.

After pouring and spreading the concrete, level and smooth it with a gauge or strike-off board.

Above: Finish surface with a wood float. Below: Cure concrete by covering with waterproof paper.



and D. More cord is stretched between these points.

Excavate the area between the cords to a depth of 10 inches. Dump about six inches of cinders or gravel into the excavation and tamp, roll, and level. Set two-by-sixes on edge along the boundaries of the excavation and hold them in place with stakes driven into the ground. These are the side forms and should be checked to be sure that they are level. This can be done with a carpenter's level on a piece of two-by-four, laying the two-by-four across the forms at right angles at various points. Also check to assure yourself that the forms are parallel by measuring the width at frequent intervals.

If the drive is to be curved, use thin boards or plywood for the forms along the curves. To make them easy to bend, soak them in water. The stakes on the outside of curved forms should be spaced much closer together than those used with straight forms.

To provide for expansion and contraction, install parting strips at right angles to the side forms at 20-foot intervals. The procedure is to lay concrete in every other partition thus formed, allow it to dry, remove the parting strips, and pour the remaining slabs. Another method, which allows the drive to be poured continuously, is to place strips of tarred felt against both sides of each parting strip and to pour all the concrete before the parting strips are lifted out. When the parting strips are removed, the tarred felt remains permanently in position, held by the pressure of the concrete, providing a definite joint between sections.

To estimate the quantity of concrete needed, you must know the volume of the driveway. For example, suppose you want to lay concrete six inches thick over an 8x30-ft. area. The total volume is ½ ft. x 8 ft. x 30 ft., or 120 cubic feet. Since one cubic yard contains 27 cubic feet, a little less than five cubic yards of concrete will be required. To take care of waste and irregularities, mix up a full five cubic yards (always add five to 10% for waste).

A 1:2:3 mixture, which is ideal for a driveway, will require seven sacks of cement, 14 cubic feet of sand, and 21 cubic feet of stone to make one cubic yard. For five cubic yards, these quantities are, naturally, multiplied by five.

Mixing should be done on a floor or platform made from tightly fitting boards. The measured amount of sand is spread and covered with the correct amount of cement; then the pile is mixed with a shovel until

the color is even throughout. The mixture is now covered with the stones and worked until they are evenly distributed. Make a deep hole with the shovel in the center of the pile and pour water in. Continue mixing until the concrete is workable. Before making up a large batch, a trial mixture is suggested to check whether it will be too stiff, too wet, or too rough.

If too stiff, slightly change the proportions of sand and stone in the next batch. If too wet, add sand and stone in small amounts until the right degree of plasticity is obtained. Never let the concrete mix stand more than a half an hour before pouring.

When pouring, be careful that no air bubbles form anywhere in the concrete. They can be avoided by tamping the mix with a spade as it is poured. After the form is completely filled, level the concrete with a strike-off board, as shown in Fig. 5. Rest the strike-off board on the side forms and move it along with a saw-like motion. To insure drainage, the strike-off board can be cut to a convex or concave curve, as indicated in Fig. 6, so the center of the drive will be either higher or lower than the edges. If you use a concave curve, place drains in the driveway—one at the garage end and another at the street end.

A few hours after pouring the concrete, when it is stiff but still workable, finish the surface with a wood float. Or, to produce an even surface on either a flat or a crowned pavement, procure an old canvas or rubber belt, 4 to 6 in. wide and about 12 ft. long, and draw it back and forth across the concrete, working slowly from one end to the other.

As soon as the surface has become sufficiently hard to resist marring, cover it with waterproof paper, wet straw, wet burlap, or 2 in. of moist sand or earth. This assists the concrete in curing and should be kept moist for about seven days. At the end of that time, the covering can be removed and the driveway put into use.

If you object to white concrete because of the glare or because it isn't decorative enough in appearance, it can be tinted by adding coloring matter to the cement before mixing. This coloring matter is in powder form and can be obtained at your local paint or hardware store. To make sure of getting a uniform color, do a thorough job when mixing the powder into the cement.

There are two other methods of coloring the drive. You can apply one of the commercially made dusting materials after using the strike-off board. Or, you can use a concrete dye after the driveway is hard. •

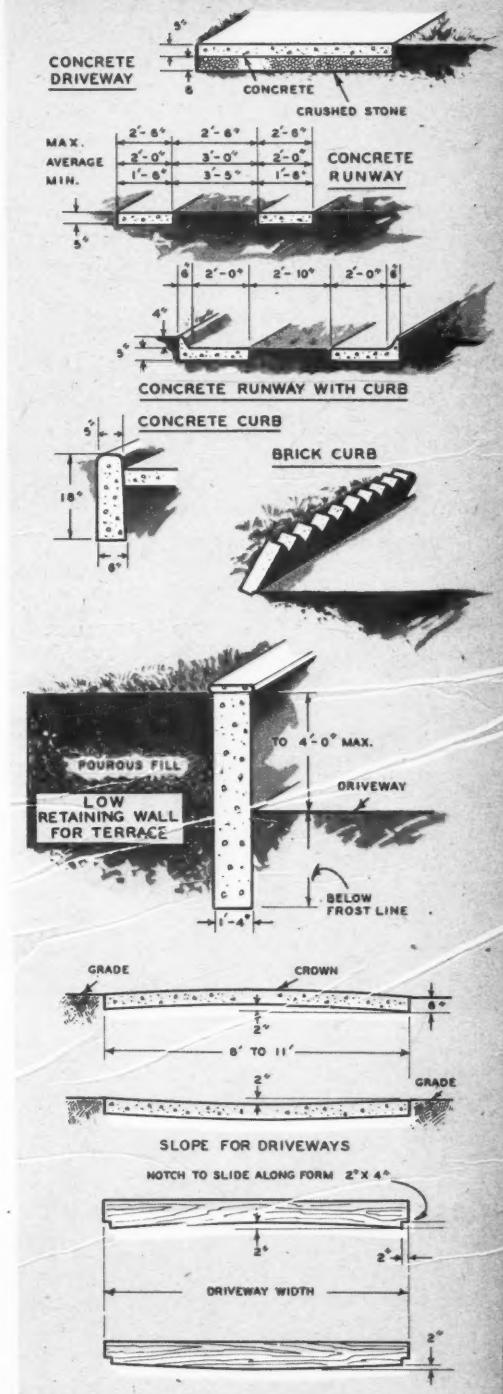
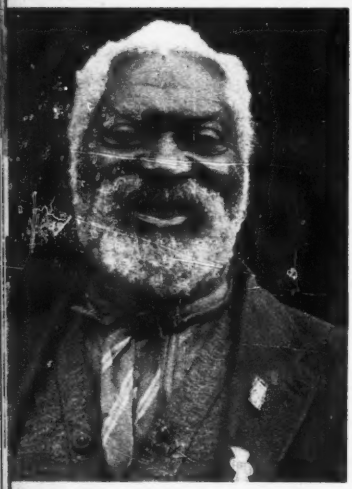


FIG. 6

GAUGES FOR LEVELING CONCRETE BASE (STRIKE-OFF BOARDS)

Monthly Photo Contest

1st Prize ($10)..Who's Homely? Taken by Alex Scheer of Dearborn, Mich., with a 2¼x3¼ Ensign Reflex; Ansco Supreme film; two No. 2 floods at f-16.



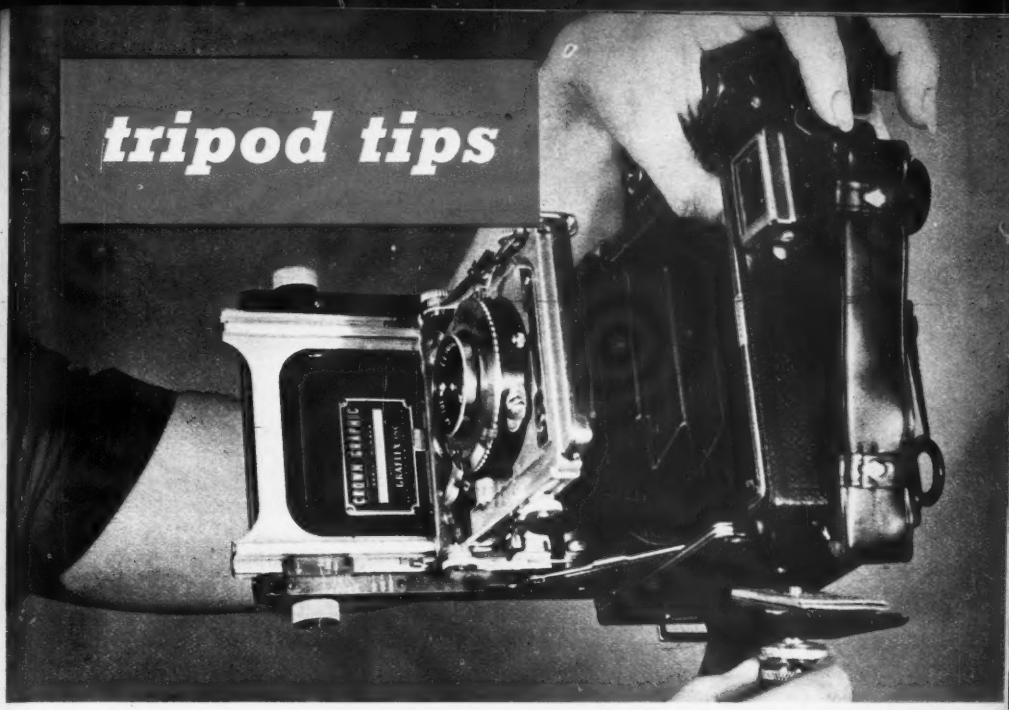
$5 Award..Uncle Thrash An excellent study of a 117-year-old Negro. Mrs. Eugene Landess of Fayetteville, Tenn.

$5 Award..Goats Beard E. D. Bangtson of Minneapolis used a 3¼x4¼ Recomar and Verichrome; 1/5th sec., f-16.

$5 Award .....Serenity H. D. O'Brien of Valley View, Tex., shot against a brilliant sun to get this effect with a Ciroflex.

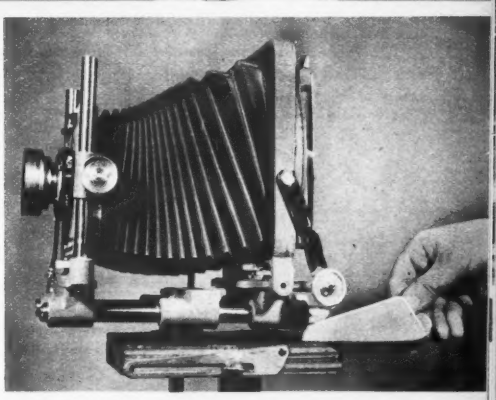
Please put your name, address and picture-taking data on back of each print. Wrap with cardboard stiffeners and enclose a self-addressed stamped envelope or postage for return of unused photos. Prize-winning pictures are not returned. Judges are MI Editors. Duplicate prizes awarded in case of tie. Please address your entries to: Monthly Photo Contest Editor, *Mechanix Illustrated*, 67 W. 44th Street, N. Y. C. 18.

tripod tips

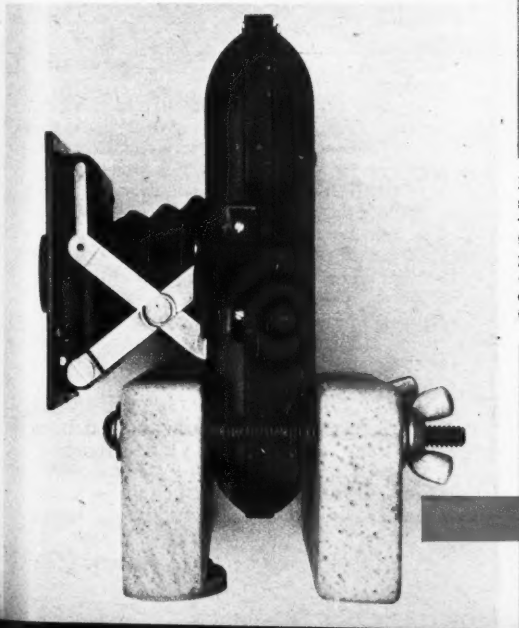


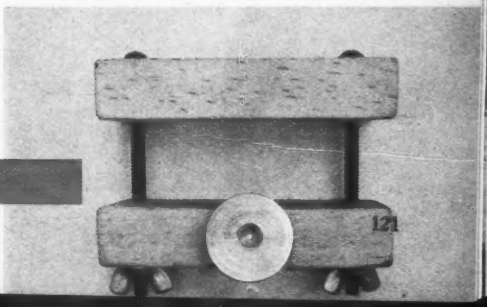
Owners of the small Crown Graphics will find this tip useful. Cut a leather washer to fit top of tripod head. This will offset camera so that the film holder clamp will not touch the head.

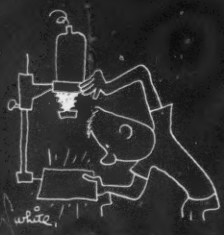
Photo at right shows how a rubber door stop can be used to steady a view camera. Insert one or more as needed, at the back of the camera, wedging them in tightly between tripod and camera back.



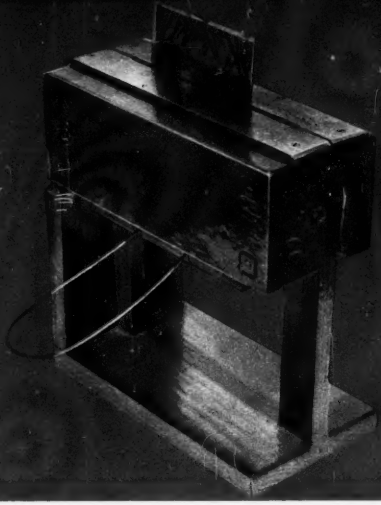
Have you an old camera that lacks a tripod socket? You can make a tripod adapter for it very easily, with simple tools and the expenditure of only a few cents. You will need two pieces of wood and two 3/16-in. bolts. Length depends upon the thickness of your particular camera. A tripod head adapter is screwed into the bottom as shown in the photograph below.







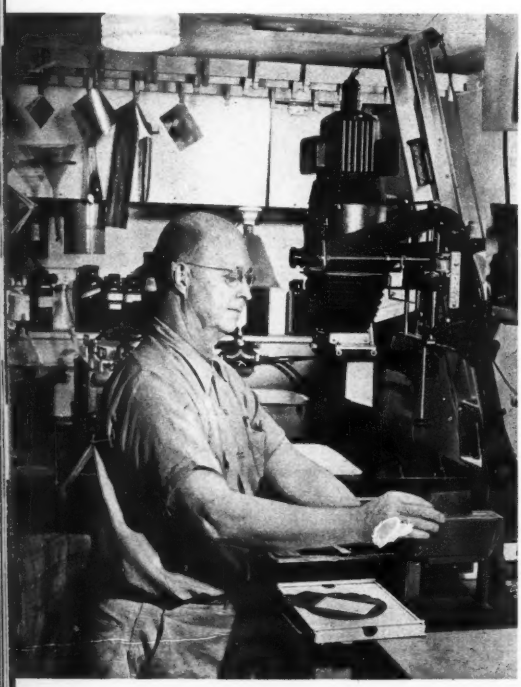
An uncanny device that will actually make your negatives repel dust after they have been passed through it.



MI Static Eliminator

By Harlan Major

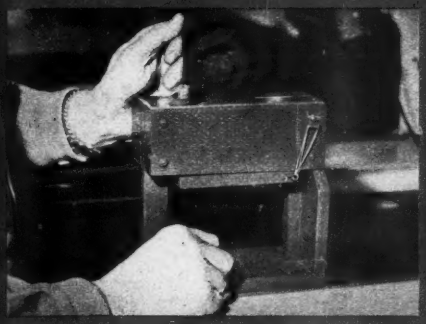
The only precaution to observe when using the Static Eliminator in the darkroom is to keep all undeveloped film and paper at least four feet away.



THE photographer's king of gremlins, had moved into my darkroom with the idea of making the visit permanent. Static attracted so much dust to my negatives that I had to discard most of the prints. The more I wiped or brushed the film, the quicker dust and lint settled on it. I checked the ground wire to my enlarger and to make doubly sure, I ran a new one direct to a cold water pipe. The results were the same.

I even hooked a ground wire to the film carrier. Then I grounded the upper and the lower halves of the enlarger bellows to each other. I made a copper screen cage around the enlarger and grounded it. One man told me of a solution to wipe on the film in order to make it unattractive to dust.

I had tried nearly everything but the results were the same. Bad. Then I thought about a vacuum cleaner. I figured our household model was toc big for the job, but I remembered seeing a doctor use a small suction pump to draw something out of my breathing apparatus. I found one in a second-hand store. It was small and purred like a kitten as it sucked air into a rubber tube. It was not much of a job to drill a hole in the plate supporting the upper bellows of my enlarger for the connection. I wanted to enjoy the sight of that pesky dust being



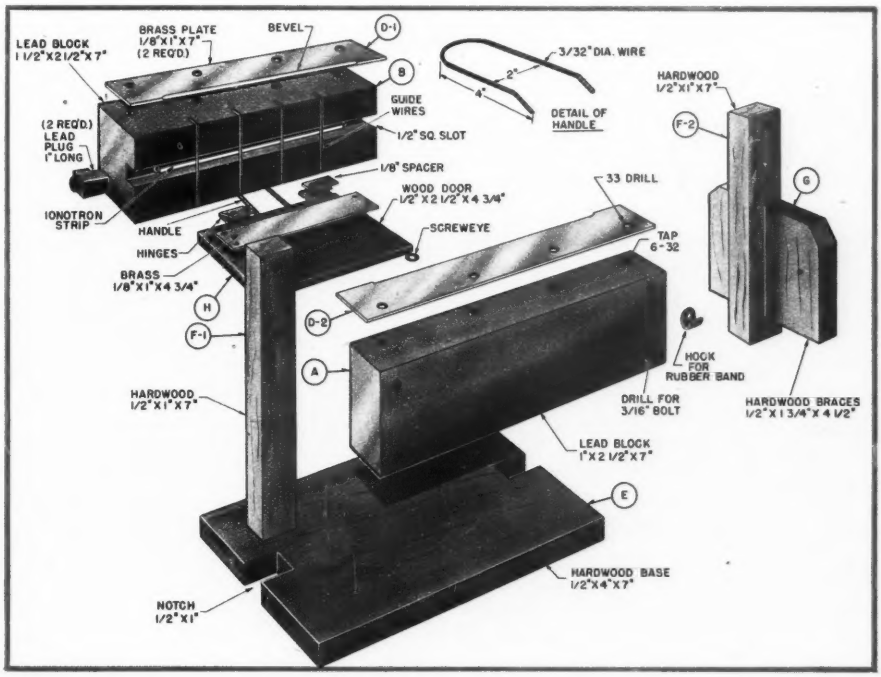
To use, negative is wiped free of dust and inserted in the Static Eliminator. When film comes to a stop, lift the lever and allow it to fall into your hand. It will now repel dust.

sucked away from my film. So, I peeked in as I switched on the motor. The air pump went to work, the tube swished a tune as it sucked in the air, but the dust and lint sitting on the film never budged. Once in a while, an extra long particle of lint would stand on end, but the static in the film did not let go the tiniest particle of dust.

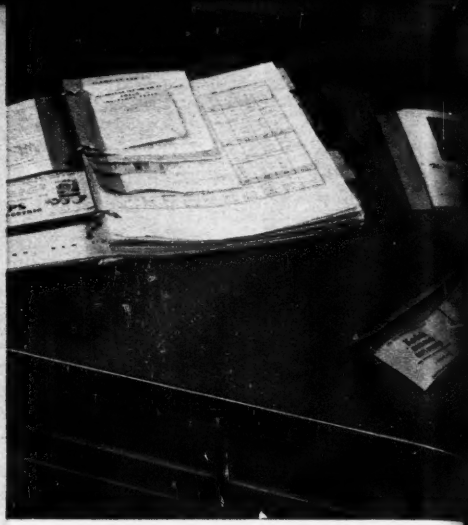
I put on my hat and coat and headed up the street—away from the smell of hypo and the influence of static. I had not gone far when I met a commercial photographer I knew. "Why don't you go to see H. E. White up at Eastman's?" he said. "He is their service engineer and he always seems to know the answers."

"Why not?" I thought. "I've asked everybody else."

Soon I was telling my troubles to Mr. White. "I've [*Continued on page* 130]



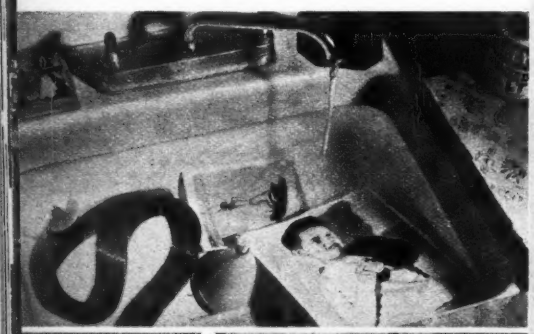
Safety Strap. A quickly detachable neck strap which can be used on the camera itself or with carrying case can be made by fitting two small harness snaps to the regular shoulder strap. See photograph above.

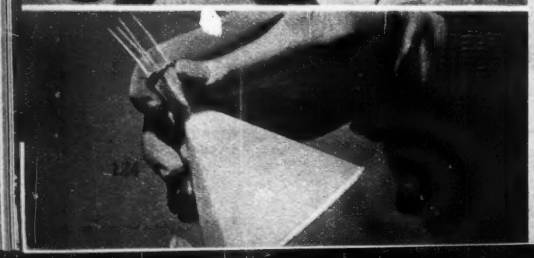


Data Book. Make your own photo data book by pasting a strip of tape over the end of each photo pamphlet as you collect it. Then punch the strip to fit a standard 3-ring binder as above.

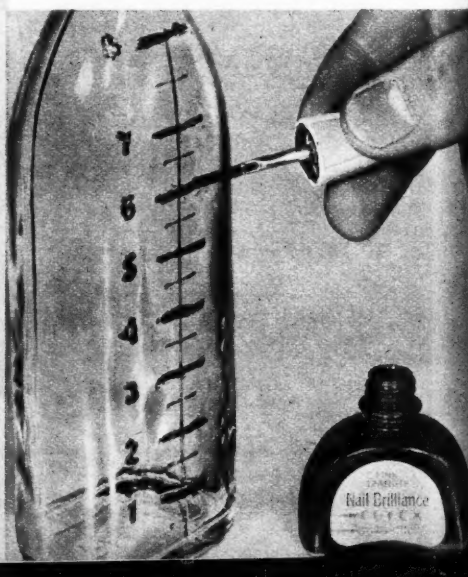
kinks for the

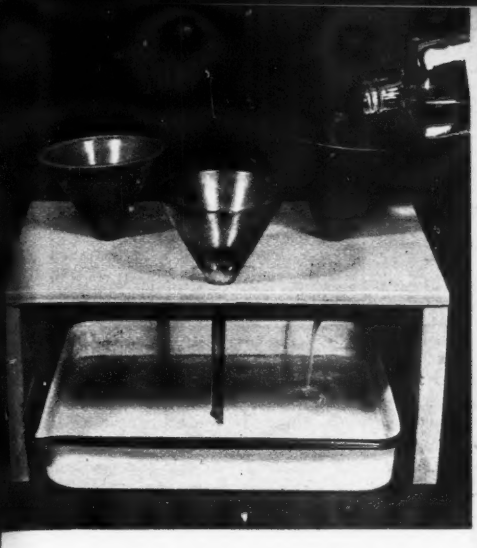
Print Washer. You can make an emergency print washer by snapping some toothpicks over end of a funnel and placing funnel over drain. Toothpick keeps prints away from hole.



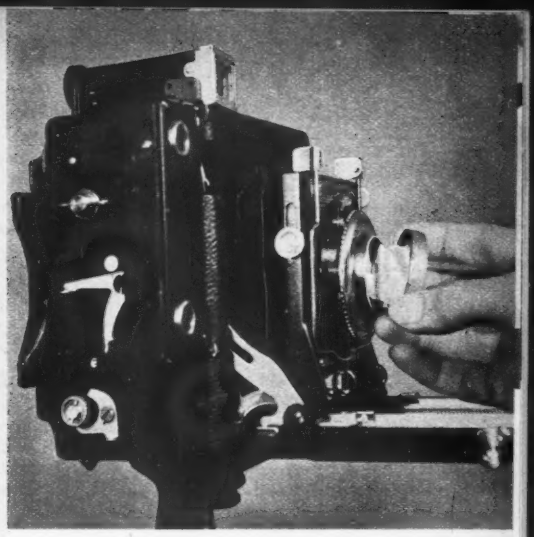


Graduate. Your baby's bottle, after he has outgrown it, can come in very handy in the darkroom. Make ounce markings more pronounced by applying nail polish. Ideal for storing stock solutions to be diluted with water.





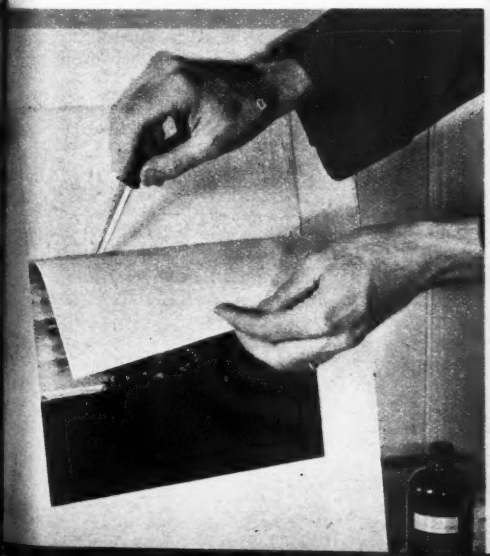
Rapid Filtering. Filtering operations in the darkroom can be speeded up considerably by making a wooden stand to hold three funnels. Use absorbent cotton as the filtering medium.



Tissue Storage. A handy place to keep tissue is in the inside of the lens cap. It will serve as a constant reminder to make certain the lens is clean before tripping shutter.

photo fan

Detaching Photos. Pictures which have been mounted with rubber cement can be removed by applying carbon tetrachloride to the back of the print. Start at one corner and peel down as cement softens.



Sure Shooting. To make certain that battery is making good overall electrical contact with the battery case, unscrew the cap and twist it back and forth a few times.

Bronzing Baby's Shoes

[*Continued from page* 97]

work a sheet or bar of pure copper is suspended as the anode; it is connected to the positive side of the current source. Distance of the work from the anode should not be less than 3 in. When there is sufficient space in the tank, one copper anode is used on each side of the work. For even plating when only one anode is used, the work must be reversed during half of the plating time.

A gallon crock can be used. A glass tank, available from supply houses, will permit use of two anodes and the plating of two shoes at a time. A well-constructed, tight-fitting wood box can be made into a serviceable plating tank. It must be well lined with a compound not affected by plating chemicals. Thick asphalt varnish can be used, but it is subject to cracking under strain. A thoroughly satisfactory material is sold by Nukem Products Corp., Buffalo, N. Y., under the name "Nukemite." It is acid and chemical-proof and dries quickly to a tough, rubber-like film.

Frequent agitation or stirring of the electrolyte will give faster and more even plating, because the path between anode and cathode is constantly being depleted of metal. Stirring can be done with a hard rubber paddle.

Make up the following solution:

Copper sulphate	**1¾ lbs.**
Sulphuric acid	**3½ oz.**
Water	**1 gallon**

Dissolve the copper sulphate in hot water, then add cold water to make a gallon. When the solution is cool, slowly stir in the acid. Handle the latter carefully; it is highly corrosive.

For small plating jobs of this nature it is customary to use an ordinary 6-volt storage battery as the current source. If you plan on doing very much plating, it is a good plan to purchase a small 6-volt dry-disk rectifier, in the form of a battery booster. A good buy is the Allstate Battery Booster sold by Sears, Roebuck & Co. for $14.45. It is rated at 10 amperes and will easily handle the plating of two shoes at one time.

Referring to the wiring diagram, it will be seen that a voltage regulator between the current source and the plating tank is required. This takes the form of a small variable rheostat of about 6 ohms resistance and capable of handling up to 10 amperes.

A 0-4 or 0-6 D. C. voltmeter is connected across the circuit in series with a simple on-off switch. Note from the photo that the entire control unit can be mounted on a panel for ease in making input and output connections. It is a simple matter to connect the clips from the battery booster, if one is used. Attach battery clips to the ends of the output wires for ease in connecting them to the anode and to the cathode bar. The latter, from which the work is suspended, is a rod or bar of aluminum or copper. A similar bar can be used to suspend the copper anode when it does not project above the solution level.

As previously mentioned, after the shoes have been conductively coated they should be handled as little as possible and must not be touched with the hands at all. To commence plating, hang the shoe from the cathode bar. Be sure that the hanger makes contact with the conductive coating. Turn on the current and adjust the rheostat so that half of the resistance is in the circuit. Slowly immerse the shoe in the electrolyte, using a glass pusher rod if necessary. Let it hang from the cathode bar and at least 3 in. from the anode. Adjust the rheostat so that the voltmeter reads from 3 to 5 volts.

Remember to have the current turned *on* when you immerse the work in the tank, and when you remove it.

When the work is first introduced into the tank a higher voltage will be required until the current has had time to bridge across the individual grains of copper which form the conductive coating. You can watch the plating "creep" over the work. Only a few minutes will be required in the case of copper powder, and longer in case you used graphite. When the initial plating film has covered the work, reduce the current to 1½ volts and leave it there for completion of the job.

At 1½ volts the plating should have a rose color and will remain smooth and even. If you use too high a voltage, the work will take on a burned appearance and the deposit will be spongy.

An hour or two will be required for a good plating job which is heavy enough to withstand buffing and chemical treatment afterwards. If you wish an especially heavy plate, remove the work after 30 minutes and lightly scratch brush it. A brass-wire suede shoe brush is good for this operation. Do not plate too heavily as details are then obliterated.

It may happen that when you examine a shoe while it is being plated, small portions or spots refuse to slate. These defects should be caught at once. Dry the shoe with a clean cloth and gently cover the spots with *very thin* lacquer. Dust some more copper powder over the repair, making sure that it holds well.

[*Continued on page* 138]

try photo sketching

EVEN though you may not have the slightest trace of artistic talent, you can make the most lifelike sketches if you have an enlarger. Besides the enlarger you will need a negative, some paper and a pencil.

Place the negative [*Continued on page* 136]

The set-up for sketching. Image from the negative is projected directly to drawing paper.

In sketch at left, note how entire distracting background except for stump has been eliminated.

[*Continued from page* 107]

to a tone arm, follows the grooves and translates the undulations into impulses, which are increased in volume and reproduced by the amplifier section of a radio or by a separate phono amplifier. In 78-r.p.m. records, the grooves run between 85 and 100 to the inch, the needle point is about three thousandths of an inch thick, and the pressure of the pick-up against the record is between one and three ounces. In the LP records, the grooves hit between 225 and 300 to the inch, the needle tip is one thousandth, and the pick-up pressure is about a fifth of an ounce.

The tone quality of the LP disks is generally regarded as superior to that of the older records. A notable feature is absence of scratch noise, a result of the very light needle tracking.

Right off the bat, you can see that the new records won't work on an old machine. Columbia was all prepared for this. When the records were announced, Philco had a new player and a tone arm to go with them. Fortunately, no revisions had to be made in the amplifier circuits. Any owner of a high-grade phono-radio combination could tie in a 33⅓-r.p.m. turntable in a matter of minutes.

And it was a simple matter for manufacturers to rush out two-speed equipment fitted with dual tone arms or single arms containing separate pick-ups that could be switched in and out at will. This was a wise move, because there are millions . . . probably billions . . . of perfectly good 78-r.p.m. disks carefully preserved in albums, and their owners have no intention of throwing them away just for the sake of new records that play longer. Existing automatic changers could readily be adapted in manufacture to the two-speed turntables because the physical dimensions of the 12-inch LP records are identical with those of the 12-inch 78-r.p.m. disks. Only four LP records, changed and flopped automatically, can thus provide three solid hours of music—providing the changer doesn't decide to chuck them across the room into the fireplace.

Just when the two-speed turntable and the LP records began gaining momentum, RCA-Victor threw a small atomic bomb into the happy picture in the form of a new 7-inch record that turns at 45 r.p.m. and has a 1½-inch center hole instead of the ¼-inch opening found in all other records. Its grooves run between 250 and 275 per inch and the needle size and pressure are the same as for the LP disks. The playing time per side is 5⅓ minutes.

People in and out of the radio industry rushed to criticize RCA-Victor for bringing out another "nonstandard" record. A point not generally appreciated, but deserving a lot of attention, is that with the record itself the company introduced a new automatic player of highly ingenious but simple construction. The entire changing mechanism is enclosed in the stubby center post or spindle, with no outside arms, levers, carrying pans, or anything else. The spindle takes a stack of ten records, giving a total of more than 50 minutes of playing time. The records drop into position quickly and quietly. Anyone accustomed to the erratic and sometimes spectacular behavior of ordinary automatic changers will be intrigued by the effortless functioning of this new device. Its simplicity makes it especially valuable for children's use, for dance parties, etc.

The 45-r.p.m. records themselves have a construction feature not found in any others. The label area, immediately around the spindle hole, is thicker than the playing surfaces; so the latter cannot rub against either each other or the top of the turntable. This undoubtedly makes the disks last longer and give better music during their life. Most ordinary records have to be discarded long before their grooves actually wear out because they get so scratched up.

The advent of the RCA records caused the New York newspapers a few months ago to give front-page prominence to reports of a "record war" between that company and Columbia. This surprised no one because the Columbia Broadcasting System, which owns Columbia Records, has been feuding with the National Broadcasting Company, which is owned by RCA. The head of Columbia records issued a long and somewhat angry statement denouncing RCA; RCA officials said nothing and went right ahead with a million-dollar campaign to put their new system over.

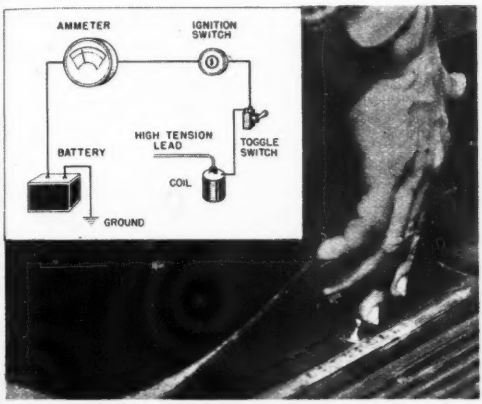
Turntable manufacturers lost no time in revamping their products to accommodate the 45-r.p.m. disks. By the time this issue of MECHANIX ILLUSTRATED appears, there will be on the market dozens of three-speed players, with double tone arms, that will handle any records now sold. If you want to play some of your old favorites, you shift the speed lever to 78, push in a ¼-inch spindle, select the three-mil pick-up, and load 'er up. If you want to go high brow and listen to Brahms or Shostakovitch for a couple of hours, shift to 33⅓, leave the ¼-inch spindle in position, select the one-mil pick-up, and pretend you're in Carnegie Hall. If there's a special new number on a

[*Continued on page* 147]

Car Kinks

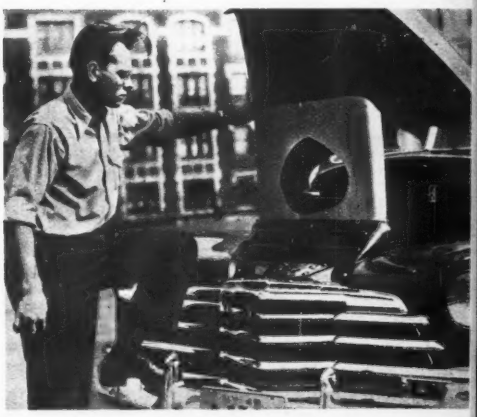
Photos by Robert Brightman

Door Saver. When you put away your car in the garage, always leave the doors half-latched. This will give the rubber weatherstripping chance to regain resiliency lost when doors are always closed.



Thief Foiler. The photo shows how a simple toggle switch can be wired into the primary car circuit to prevent theft. Switch is located near driver's seat hidden under the floor mat.

Winter Tip. Remember how motorists used to drive around in winter with a cardboard covering part of radiator? It can still be done. Use a large piece folded as shown. Insert it behind radiator apron as at right.



Safety Tip. Lessen the chance of having the door open accidently when a child leans against the handle by turning it around 180° so that an upward movement is required to open the door instead of downward thrust.

Tool Holder. Many war surplus stores sell canvas containers formerly supplied as spare parts rolls for 75mm howitzers. They are ideal for keeping your car tools clean and accessible, see photograph at the right.

MI Static Eliminator

[*Continued from page* 122]

heard of an outfit that makes some sort of gadget that seems to get rid of static on printing presses," he said. "They use radium."

"Wait a minute," I chirped, "my bank roll is not geared to buying radium and I don't want any atomic burns."

"But," came back White, "if printers can get along with it maybe a photographer can." He gave me the name of the firm and I was on my way to C. W. Wallhausen, Chief Chemist of the U. S. Radium Corporation. He recommended a material called Ionotron. It can be procured from this company at 535 Pearl St., N. Y. C.

This Ionotron we are talking about is not idle while you are looking at it. Day and night for months, years and even centuries, it throws Alpha, Beta and Gamma rays.

The Alpha rays kill static. If passed close to an Ionotron strip, a rubber comb that has been charged will not attract the slightest bit of dust or lint. Powerful as the Alpha ray is, it cannot pass through the thinnest sheet of writing paper or even a coat of varnish.

The other rays are not so friendly. The Beta ray can give you a burn about half an inch deep and will fog undeveloped film or paper. An eighth of an inch of steel will protect you and your film from this ray, if you can box it in sufficiently, but Beta bounces around like a flea gone loco, and those bounces are hard to pin down.

Gamma, the third ray, warrants the most careful consideration as it is extremely penetrating, and its resultant burn is a deep one. Gamma radiation does not bounce around like Beta, but tries to bore through heavy metal shielding and, if given the opportunity, will fog paper or film rather quickly.

From what has been said concerning radium, you might get the idea that it is nothing for an amateur to fool with, especially in a darkroom, but it must be remembered that Ionotron strips contain an extremely low concentration of radium and when properly shielded are not hazardous. They are in constant use in many branches of industry where absolute safety to the operator is necessary. The Static Eliminator, as I call it, makes the photographer's film repel dust charged either positively or negatively. You can now make clean enlargements without the slightest danger to you or the photographic supplies in your darkroom. If you can manage a screwdriver or a hand drill, you can make one. Here is how to go about it.

Parts A and B in the drawing are made of lead. The inside surfaces of the two blocks should be especially smooth and level so that they will fit squarely to each other. With the two smooth surfaces facing each other, clamp them together and drill a $\frac{3}{16}$ in. hole through both blocks as indicated in the drawing.

In operation, the film passes between the smooth faces of the two blocks. Curling as it often does, the film may catch on the edge of the slot. Guide wires will keep the film out of the slot. Space them an inch apart on block B as shown, the first one 2 in. from the end of the block. Place a stiff bar of iron or other metal on the top of the wires and clamp the wires into parallel positions between the lead block and the iron bar. While still clamped, cut the wires leaving half an inch beyond the lead block. Bend at right angles and drive them flush into the lead. Drive a small tack into the lead at the end of each wire so that the end is firmly anchored.

Next, assemble the wooden frame. Any hardwood such as oak or maple is fine. The uprights, F-1 and F-2, are glued and nailed into slots in the base E. Brace G consists of two pieces glued and nailed into upright F-2 to stiffen it. Drill holes through uprights F-1 and F-2 to match the holes in the lead blocks. When in proper position, one end of the lead blocks should rest on brace G with the upright F-2 between them. Bolt them in this position. At the other end, the lead blocks are held in position only by the bolts clamping them to upright F-1.

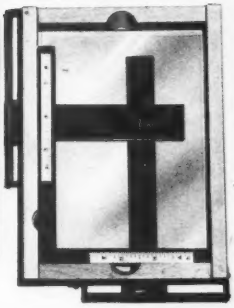
The hardwood door is hinged to the lower and outer edge of block B. Use a spacer between the lead block and the hinges for an offset. The hinge screws can be forced into the lead if holes about half the diameter of the screws are drilled into the lead. With the door hinged in place mark the exact position of the half inch open space above it. Centered under this open space, screw a brass plate 1 in. wide and ⅛ in. thick and the length of the door. Use flathead brass screws countersunk into the plate. The outside edges of the plate should be rounded. Insert a small brass screw eye into the outside corner of the door nearest brace G.

The brass plates, D-1 and D-2, are ⅛ in. thick, 1 in. wide and 7 in. long. They are screwed to the top of the two blocks $\frac{1}{16}$ in. apart and centered over the ½ in. space between the blocks. The facing edges of the plates should be beveled except for 1 in. at each end. Use flathead brass screws countersunk flush.

The assembly is now about complete and we are ready to insert the Ionotron strips. It is 5 in. long, ½ in. wide and about ⅛ in. thick.

[*Continued on page* 151]

Kodak Home Printer—One-piece top automatically works light. Accepts negatives up to 4 x 5½ inches. Strip-prints 35mm. and larger roll-film negatives. Price, $12.50.



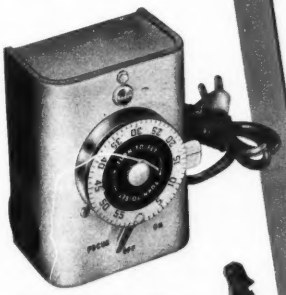
Kodak Auto-Mask Printing Frame—Clip holds negative firmly. Graduated scales on two sides also serve as paper guides. Price, $3.25.

PRINTING AIDS

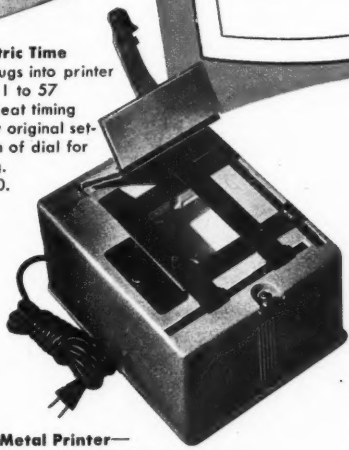
for your darkroom

Prints for your albums . . . extra prints for your friends . . . Kodak equipment makes home printing easy. Inspect these contact-printing aids at your Kodak dealer's.

Kodak Timer with Tilting Base—Has both minute and split-second hands. Switch permits stopping timer and then restarting it without resetting hands. Easy reading in dim light. Price, $7.50.



Kodak Electric Time Control—Plugs into printer or enlarger. 1 to 57 seconds. Repeat timing requires only original setting and turn of dial for each printing. Price, $13.50.



Kodak All-Metal Printer—For negatives up to 4 x 5 inches and paper through 5 x 7 inches. Illuminated masking scales; center masking; guide for lining up paper; 35mm. guides for strip-printing; negative-locking device. Price, $22.50.

Kodak Printing Frame—Offers a simple way to print. Three sizes available: 3¼ x 5½, 4 x 5, 5 x 7 inches. Supplied with a glass front—you use ordinary house lamp for light source. Price, from $1.25.

Prices include Federal Tax where applicable

Kodak
TRADE-MARK

EASTMAN KODAK COMPANY, ROCHESTER 4, N. Y

ONLY $199.50 FOR A COMPLETE POWER WORKSHOP

Your complete power workshop in just 18" x 60" floor space. With ½-hp. ball-bearing motor illustrated, **$199.50.**

SHOP SMITH

REG. TRADE MARK

For less than $200—and with eight square feet of floor space—you can have a power shop second to none in capacity, accuracy and flexibility. It's Shopsmith—five heavy-duty, extra-feature tools in one unit so beautifully engineered, so ingeniously designed that you can convert from tool to tool *in less than 60 seconds.*

NEVER BEFORE SUCH AMAZING CAPACITY

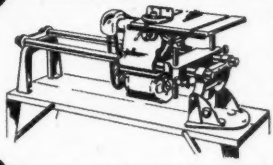
Imagine a circular saw that cuts to center of 8′ plywood panels . . . a lathe that takes work up to 15 inches in diameter . . . a drill press that mortises doors and panels as easily as it drills miniature parts . . . a disc sander that squares, miters and finishes with "try square" accuracy. You get these, and more, with Shopsmith.

OUTPERFORMS SINGLE-PURPOSE TOOLS

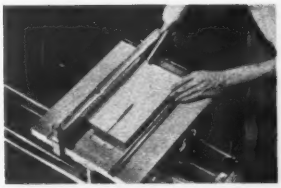
Compare Shopsmith with any combination of single tools at any price. Compare it for accuracy, capacity, all-round utility. You'll see why the thousands of men who own Shopsmith praise it so enthusiastically. On display at any Montgomery Ward store and at leading hardware or department stores. Shopsmith, complete with attachments, costs $169.50. With heavy-duty ½-hp. ball-bearing motor, $199.50.

5 RUGGED POWER TOOLS IN 1

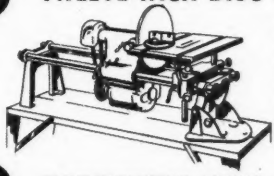
1 EIGHT-INCH CIRCULAR SAW



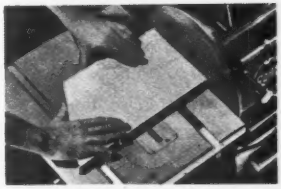
Effective table width up to 56". Maximum depth of cut, 2¼". Machined tilting table, ribbed for extra strength. Precision-tooled rip fence and miter gauge. Unique micro-adjustment permits extremely accurate ripping.



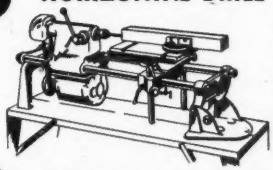
2 TWELVE-INCH DISC SANDER



Cast-aluminum disc easy to attach and remove. Extra-large, adjustable table measures 14½" x 17". Miter gauge and rip fence can be used for accurate squaring and jointing. Has features found in no other disc sander.

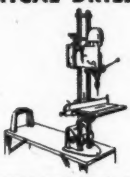


3 HORIZONTAL DRILL PRESS

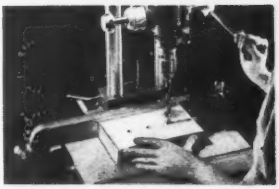


Extremely useful operation possible only with SHOPSMITH. 4" quill feed, automatic stops. Permits large, heavy pieces to be drilled or mortised quickly and accurately. Eliminates need for jigs. Length of work limited only by size of room.

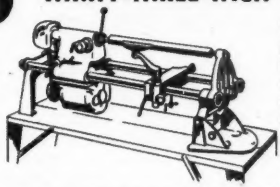
4 VERTICAL DRILL PRESS



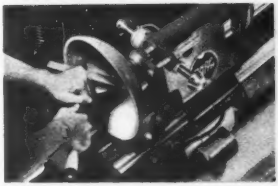
SHOPSMITH drills to the center of a 15" circle, has a maximum clearance table to chuck of 27". Jacobs key chuck takes drills from 5/64" to ½" diameter. Rugged, six-spline spindle with 4" feed. Variable speeds 875 to 3500 rpm.



5 THIRTY-THREE-INCH WOOD LATHE



With a 15" swing, SHOPSMITH has greater capacity than most other heavy-duty lathes. Distance between centers, 33". Swivel-arm tool rest always slides parallel to ways—no need for constant adjusting. Has 4" quill feed. Quickly adaptable for oversized faceplate work.



AND THAT'S NOT ALL! WE'VE MORE TO TELL YOU, BUT NO MORE SPACE TO TELL IT HERE. IT'S ALL COVERED IN AN ATTRACTIVE, ILLUSTRATED BOOKLET. WRITE FOR YOUR FREE COPY TODAY!

Address **SHOPSMITH, Dept. 105-N,**
at factory nearest you.
12819 Coit Rd., Cleveland 8, Ohio, *OR*
417 Montgomery St., San Francisco, Calif.

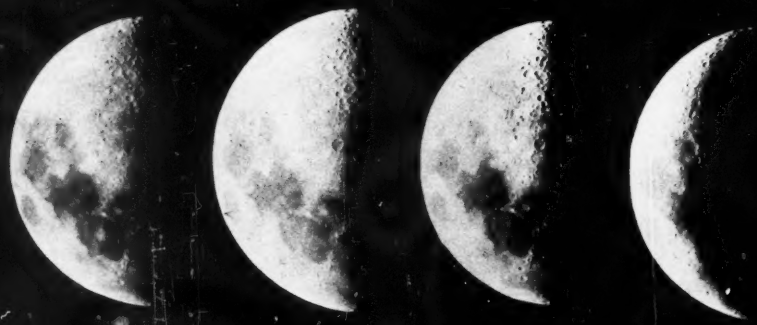
I'm interested in SHOPSMITH. *Please send me a free copy of the descriptive booklet. And tell me where I can see* SHOPSMITH *demonstrated.*

*Name*_____

*Address*_____

*City*_____ *State*_____

The Amateur Telescope Maker's Page



Conducted by Robert Brightman

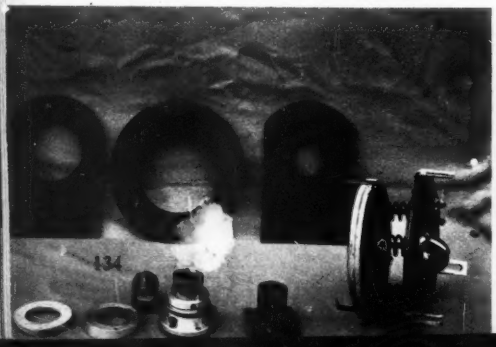
These interesting pictures of our nearest heavenly neighbor were taken by J. C. Walker of Daly City, Cal. See text for explanation.

AFTER you have completed your telescope and you have looked at the moon, your neighbors, the stars, and distant landscapes you will want new worlds to conquer. Try your hand at taking pictures through your instrument. Landscapes are fairly easy. A simple set-up for taking pictures of terrestrial objects was described in the May 1949 issue of MECHANIX ILLUSTRATED. The celestial object whose picture you can most easily take is the moon, our only satellite, about 240,000 miles distant. The pictures at the top of this page were taken by Mr. J. C. Walker of Daly City, California. We reproduce that part of his letter describing his picture-taking technique.

I have been trying again for moon pictures and as you will observe from the enclosed, they show considerable improvement. My camera [*Continued on page* 153]

Sylvestus B. Burdakin of Elmwood, Conn. and telescope which he built from MI plans. Eyepiece adapter shown below was a lathe project.

The two photos below show the details of Mr. Burdakin's focusing eyepiece adapter and how he constructed the cell for his telescope mirror.



Hailed as the Greatest of all time!

the NEW 1950 HARLEY-DAVIDSON

HYDRA-GLIDE

YEARS AHEAD! More Power • Greater Acceleration • Road-hugging Stability • Feather Touch Steering • Positive Braking • Amazing Comfort.

Everywhere you go, experienced motorcyclists say this is the finest Harley-Davidson of them all! They acclaim its surging new power, its rocket-like acceleration, its easy steering, positive braking, ground-gripper stability and its amazing float-along comfort that lets you ride all day without tiring! You'll enjoy the outdoors as never before, as you take in thrilling race meets, hillclimbs, gypsy tours and sightseeing trips. And you'll agree, there's no sport like motorcycling, no fun like owning a Harley-Davidson! One ride will convince you. Small down payment and easy terms . . . and "you're in!" See your dealer without delay. Mail the coupon now.

HARLEY-DAVIDSON MOTOR CO., Dept. MI, Milwaukee 1, Wis.

Send *free* copy of ENTHUSIAST Magazine filled with motorcycle action pictures and stories; also literature on new 1950 models.

Name.....

Address.....

City..... State.....

DEALERS: Valuable franchises available for the full line of Big Twins and Lightweight. Write today!

Try Photo Sketching

[*Continued from page* 127]

in the enlarger and focus the image on a sheet of paper. The back of a discarded enlargement is ideal for this purpose. Trace the main outlines of the image as projected by the enlarger. Later, you can try shading.

The technique consists of filling in with the pencil all the shadow areas without paying too much attention to the actual outlines. Just darken the brightest areas of the projected image. Use a lighter touch on the areas moderately illuminated. The darkest areas of the projected image, which will be the white parts of the final picture need not be touched at all. If you work patiently, covering each lighted area with the pencil until it matches the darker or unlighted area without consciously trying to draw specific features, you will be amazed when you turn on the light with what you have produced.

All of the problems of drafting, proportion and perspective as well as lighting are neatly solved when you use this technique. You should be able to turn out work which many artists would envy.—*Eugene M. Hansen*

The Ideal Christmas Gift

DREMEL *Electric* MOTO-TOOL

10 REASONS WHY MOTO-TOOL IS A BETTER BUY

Here's what you get in a Dremel No. 2 Moto-Tool: Oil-less, sealed bearings. Patented automatic chuck lock pin. Oversize armature shaft, hardened, ground, polished. Shockproof, bakelite housing. Dust filtered air cooling system. Dynamically balanced armature (for vibrationless operation). Exclusive hanger hook. Sturdy 110-120 Volt AC-DC motor. Weight only 13 oz. Cutters in Kit No. 2 are made of **high speed steel** (not common high carbon steel) for longer life, faster cutting.

Moto-Tools, Kits and Accessories should not be confused with "bargain offers." We invite you to compare Dremel Products feature for feature with other similar equipment. If you are not fully convinced ours are far superior in quality, design and performance, we don't want you to buy.

Portable

DRILL PRESS

Add all-around versatility to your Moto-Tool with this 12" high drill press. Just the thing for creating costume jewelry, model making, carving, routing, drilling, etc. Utilizes No. 2 Moto-Tool, which can be raised, lowered or swung in any direction. Weighs 3¼ lbs.

Only $9.95
(Less Moto-Tool)

WIDELY USED IN INDUSTRY—

Moto-Tool is a precision-built electric tool, backed by over 13 years of industrial use in such plants as: GENERAL ELECTRIC . FORD . REMINGTON ARMS . NASH-KELVINATOR . WESTINGHOUSE . DOUGLAS AIRCRAFT, etc.

PRE-WAR PRICES STILL PREVAIL

MOTO-TOOL KIT NO. 2 with 23 accessories including **high-speed steel cutters** and Model 2 Moto-Tool in natural finish hardwood case ---------- **$23.50**

MOTO-TOOL NO. 2 with one emery wheel point ---- **$16.50**

WHERE TO BUY—

Buy Moto-Tool from your dealer. If he cannot supply you, send **check or M.O.** for items desired and we will ship **postpaid**. Or, send only **$2** now and pay postman balance plus postage on delivery. **MONEY-BACK** if not delighted after 5 days' trial. Catalog of Dremel Tools **FREE**.

Dremel Mfg. Co., Dept. 149-L, Racine, Wis.

BIG VALUE!

MODEL NO. 1

MOTO-TOOL KIT
Only $17.50

Moto-Tool Kit No. 1 contains the lighter Model No. 1 Moto-Tool and 34 practical accessories (steel cutters, grinding wheels, etc.) in an attractive, lacquer-finish wood case. It's the biggest bargain in the field ---------- **$17.50**
MOTO-TOOL NO. 1 with one emery wheel point ---------- **$9.85**

DREMEL *Electric* SANDER

Popular Labor Saver for the HOME and SHOP

Makes play of wax polishing

Soothes tired muscles by massage

The popular Dremel Electric Sander is more than a sander . . . it's also a polisher and massager. This miracle machine is so easy to handle, a child can use it. It delivers 14,400 strokes per minute. **(1) As a sander,** it gets into tight corners, takes the effort out of sanding walls, woodwork, furniture, workshop projects, etc. **Its straightline (non-rotary) action will not burn or scratch surfaces. (2) As a polisher,** it does a professional job on waxed surfaces of cars, furniture, refrigerator cabinets, etc. **(3) As a massager,** it's ideal for tired or sore muscles of the back, legs or arms. Users testify it is more effective than machines made expressly for this purpose.

LOOK AT THESE DREMEL FEATURES

Dremel Electric Sander does all the work . . . you merely guide it. It weighs only 2½ lbs.; it's foolproof (has only two moving parts . . . never needs oiling). Quick-change clamps firmly hold abrasives and pads. Dremel Sander is sturdily built to give long, trouble-free service. Operates on 110-120 Volt, 60 Cycle, AC. Thousands and thousands of satisfied users **prove its outstanding value.**

WHERE TO BUY IT—Dremel Electric Sander comes complete with 6 sheets assorted grade Garnet Paper for sanding, plus felt pad and sheepskin for polishing. Buy it from your dealer. If he cannot supply you, use coupon below to order direct from factory. We ship **postpaid** if you send check or money order in full. Or, send **$2** now and pay postman balance plus postage, on delivery. **Money back** if not delighted after 5 days' trial.

For men who harbor a hobby or do their own repair work . . . for boys who like to make things . . . no other tool will give as much pleasure and satisfaction in the home or workshop for the small amount of money invested as a Dremel Electric Coping Saw. It works in any direction . . . delivers 7,200 strokes per minute . . . so easily, there is no effort . . . so smoothly, work needs no sanding. Makes child's play of tricky scroll designs . . . saws through ¾" medium hard wood at a foot-a-minute speed. Touch-of-the-trigger, foolproof action. Saw has only two moving parts . . . never needs oiling. Operates on AC current. Thousands and thousands of satisfied users.

Plan for making six useful, decorative projects packed with each Dremel Electric Coping Saw.

WHERE TO BUY IT—Buy Dremel Electric Coping Saw from your dealer. If he cannot supply you, use the coupon to order direct from factory. We ship **postpaid** if you send check or money order in full. Or, send **$2** now and pay postman balance plus postage, on delivery. **Money back** if not delighted after 5 days' trial.

DREMEL MFG. CO. • DEPT. 149-L • RACINE, WIS.

If Your Dealer Cannot Supply You USE THIS HANDY COUPON ORDER FORM

DREMEL MFG. CO. • Dept. 149-L • Racine, Wisconsin

- ☐ Enclosed find $_____ (Check or M.O.) in full payment for items checked below. Ship **postpaid** at once.
- ☐ Enclosed find $2.00 in part payment for items checked below. I agree to pay postman balance plus postage, on delivery.
- ☐ Dremel Electric Sander_____ **$14.85**
- ☐ Dremel Electric Coping Saw_____ **$ 5.85**
- ☐ **Free catalog of Dremel Electric Tools.**

Name _____

Address _____

City _____ Zone___ State_____

Have Your Own Lasting, Successsful Business—Be Your Own Boss—Help Fill Huge Demand . . . No Experience Is Necessary

Rich profits are waiting to be tapped in this new field. New MIRACLE finish gives a velvety, luxurious surface to radios, lamps, toys, signs, store displays, figurines, auto dashboards, and hundreds of other items. Make old objects beautiful and saleable — make new things worth much more with this soft, rich covering that can be applied to any surface, even if old and worn.

START RIGHT AWAY

Yes, you can learn in a few days to start MAKING MONEY! Everything you need is furnished, including fully detailed, illustrated instructions that are complete and easy to understand. Every point is explained, to show you how to start on the road to big money, full or spare time, right in your own home.

EVERYTHING COMPLETE

In addition to full instructions, you get all materials that will enable you to start at once. A few cents worth of materials can mean many dollars in return. You can earn up to $5.00 per hour and more spare or full time. Boost your present income or start your own profitable business.

ACT NOW

Grasp this opportunity TODAY — start your own business. It's too good to miss! SEND NO MONEY — fill out the coupon and stick it on a post card or in an envelope and mail today for full details, FREE sample of FLOK-KRAFT covered material, and hundreds of useful and profitable IDEAS. Do it NOW — be first!

Covers Wood, Fabric, Metal, Glass, Plaster, Plastic or any Surface

It covers

TOYS old or new

LAMPS take on a new distinctive beauty

JEWELRY BOXES give perfect protection

DISPLAY PIECES become unusually eye-appealing

CAR DASHBOARDS made soft as velvet

SEND NO MONEY

USE THIS COUPON

COAST INDUSTRIES Dept. 3R
1004 So. Los Angeles St.,
Los Angeles 15, Calif.
Please rush me all the details!

FLOK KRAFT TRADE MARK REG.

NAME _____
STREET _____
CITY _____ STATE _____

Bronzing Baby's Shoes

[*Continued from page* 126]

A fingernail polish bottle, with brush, is a good container for the thin touch-up lacquer.

After you have plated a number of shoes you may find that the deposit is becoming rough. This may happen when the anode area is considerably larger than that of the work and is the result of more copper being taken into the solution from the anode than is deposited on the work. This depletes the amount of free acid, which can be restored by adding more. When the anode area is considerably less than that of the work, the amount of free acid will likewise increase, up to a point where plating becomes difficult to control. This condition is also met with when the anode copper is of a type less easily carried into solution. The remedy is to add a little copper carbonate to neutralize some of the free acid. After the electrolyte has been in use for some time there will be a sludge that accumulates on the bottom of the tank. This will do no harm, but be careful to remove any foreign particles floating on the surface as it will cause roughness in the deposited metal.

Assuming that you have plated the shoes to your satisfaction, remove them from the tank and rinse off the plating chemicals. You may wish to keep them in this state, a smooth but unpolished copper color. In that case, give the shoes a thin coating of jewelers' grade protective lacquer, which is invisible when dry.

In either the polished or unpolished state the shoes can be given a "statuary bronze" coloration chemically. Simple immersion in a dilute, warm solution of potassium sulphide will accomplish this. A somewhat larger range of sulphide colors can be secured, according to the time of immersion, with 2 oz. potassium sulphide dissolved in a gallon of water, to which ½ oz. ammonia has been added. Use this solution cold.

In finishing the shoes illustrated, an antique green effect was desired. To secure this effect the work is first scratch-brushed and then treated with a special two-tone antique formula, which results in a green coloration against a soft brown background. Use this formula:

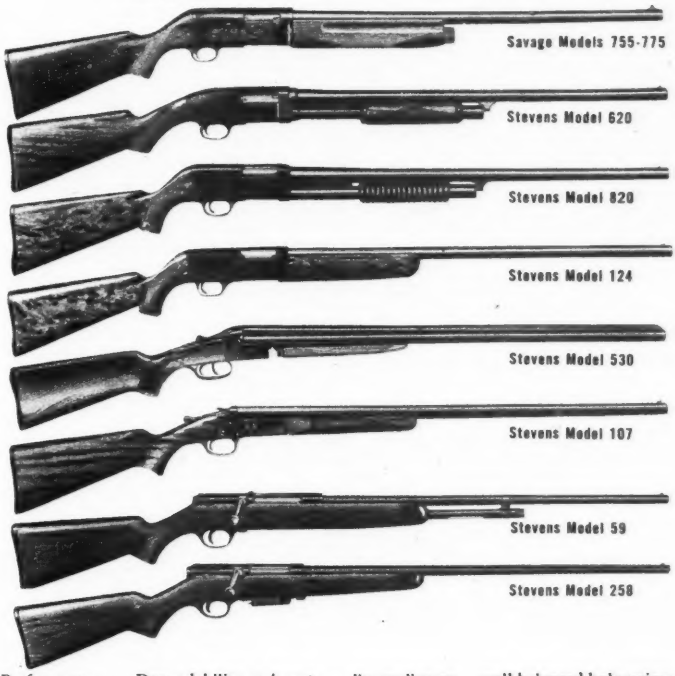
Water	2 oz.
Sal ammoniac	68 grains
Copper nitrate	170 grains
Sodium chloride	170 grains
Glycerine	6 drops

Five or six drops of glycerine are usually sufficient; it is added to control the drying rate

[*Continued on page* 147]

SHOTGUN VALUES

FIRST IN THE FIELD



Looks . . . Performance . . . Dependability at *lowest cost* make Savage-built shotguns *the* "first in the field" VALUES. Look over this wide range of models. Take your pick from sleekly streamlined auto-loaders (standard and lightweight models) . . . fast-handling "pump" guns . . . well balanced bolt action repeaters and dependable "singles" and "doubles". Then, choose the *kind* of gun for *your* kind of shooting at the price you want to pay. See these Values at your Dealer's—Write for Free Catalog.

Savage Arms Corporation • Firearms Division • Chicopee Falls, Mass.

STEVENS PIONEERING BETTER GUNS AND GREATER VALUES SINCE 1864

SAVAGE WORLD FAMOUS FOR DEPENDABILITY AND ACCURACY

"First in the Field" in VALUE

Savage Streamlined Automatics—Models 755 (standard for long range shooting with heavy loads); 775 (lightweight for upland game and skeet). 12 and 16 ga. —3-5 shot. New, streamlined design. No changes in tested, service-proven functional design, but trigger and hammer mechanisms have been improved.

Stevens Model 620 — Slide Action Repeating Shotgun. 12, 16, 20 gauge. 5-shot with one in magazine, making 6-shot repeater. Fast handling, smooth operating, dependable. Checkered walnut pistol grip; checkered slide handle.

Stevens Model 820 — Slide Action Repeating Shotgun. 12 gauge only. The newest Savage "first in the field" value. Sensationally low priced. Natural pointing, smooth operating. Stock and slide handle of Tenite.

Stevens Model 124 — Repeating Shotgun. 12 gauge only. Features a compactly efficient, simple to operate cross bolt action — a Savage pioneered design. A new value in the repeating shotgun field. Tenite stock and fore-end.

Stevens Model 530 — Double Barrel Shotgun. 12, 16, 20 and .410 gauges. Hammerless . . . coil springs . . . forged steel barrels. Checkered walnut stock and forearm, full pistol grip. Well balanced, natural pointing, dependable. (MODEL 311 DOUBLE — same as above but with stock and forearm of Tenite).

Stevens Model 107 — Single Barrel Shotgun. 12, 16, 20 and .410 gauges. Hammer style . . . automatic ejector . . takedown . . . case hardened frame. Walnut stock and forearm. (MODEL 94 SINGLE — same as above but with stock and forearm of Tenite).

Stevens Model 59 — Bolt Action, Tubular Magazine, 6-shot Repeater. .410 gauge. 2½ or 3 inch shells. One piece walnut finish stock with black tipped forearm. Lightweight, well balanced, attractively priced.

Stevens Model 258 — Bolt Action, Clip Magazine 3-shot Repeater — 20 gauge. 2 shells in clip, one in chamber. Walnut finish stock with black tipped forearm. Takedown. A fast handling, low priced model in a popular gauge.

Full POWER and PRECISION at your fingertips

Only a flexible shaft tool gives you the added versatility and extra capacity of a full-size motor plus featherweight, fingertip control. Fairchild's 1/20th h.p. motor delivers 16,000 r.p.m. at the pencil-size hand piece, answers every demand, from tough routing and grinding to delicate etching and carving. This combination of power and control makes the Fairchild Flexible Shaft Tool a must in every shop. Check these features against any tools in the same price field: 3 foot wound steel cable, rotating in spring steel sheathing; outer covering of plastic seals in lubricants, maintains flexibility; chuck takes all 1/8" tools, with adapter provided for 3/32" shanks. From start to finish, on every job, the Fairchild Flexible Shaft Tool will be the handiest tool on your workbench. In attractive wooden case, with 10 highest quality accessories, it sells for only $19.95. The BIGGEST TOOL VALUE ON THE MARKET!

Drop the hint—it's a perfect gift!

Fairchild Industries, Inc.
110 Main Street
Burlington, Vermont
Gentlemen:
I have been unable to purchase your Model F-2 Flexible Shaft Tool Kit from my local dealer. Will you kindly forward me_____of these kits. My check or money order for $2.00 ☐ (balance COD) or $19.95 ☐ for each kit (Postpaid) is enclosed. Please credit my dealer,_____
of_____on this sale.

Name_____
Street Address_____
City and State_____

1950 Studebaker

[*Continued from page* 81]

and there was poor Ayres, waiting to greet me. We discussed company plans and particularly Studebaker's version of the automatic transmission which will make its debut on the Commander and Land Cruiser in early 1950. Then we made arrangements for me to test these cars in California next winter. Until then, I have sworn to make like a sphinx. So for now, back to little needle nose.

We drove to the 850-acre proving ground, one of the best in the country. I was offered my choice of cars, all thoroughly broken in. I selected the four-door Champion which is the low man on the Studebaker totem pole.

Before I had made more than two laps of the three-mile track, I realized the new Champion has a lot more punch and handles much better at high speeds than its predecessors. The horsepower has been raised to 85 from the former approximate 80 and this has made a considerable difference.

Improved performance was also noticeable when I drove into tough curves at 80 mph and got around without any effort. This was a near impossibility with previous models which had looser front-end suspension. In all, I drove about 50 miles at high speeds on the track. Then I headed for a short half-mile dirt course.

On the dirt, I spun around corners with all wheels screaming but had the car under full control at all times. When this was over, I made several dry side skids doing about 70 and found I could snap it out at any time. The Champion is a remarkably fine handling car.

From the dust track, I headed for some rough South Bend roads which could snap the neck off a Japanese beetle. About ten miles of this proved to me that the Studebaker is probably the finest riding car in its price range made in America today. The car I tested was equipped with a standard three-speed transmission. Overdrive is available at extra cost and would add a mile or two to the top speed. In conventional range (always lower when overdrive is used) acceleration figures would drop anywhere from a half-second to a full second on each run.

I headed for the water trough for a grand finale. Cars are tested there not only for leaks but to find out if they can stand a good dousing. The Studie passed with flying colors.

I like the Studebakers and I like the company that makes them. They are not the fastest cars on the road but that feature is not too important to many buyers. They are, on the other hand, tops in comfort and quality. They're rugged, reliable, good looking and one of the best dollar values in a car today. •

AMERICAN FLYER

Developed at the GILBERT Hall of Science

More REALISM For Your MONEY

A PACEMAKER IN VALUE $29.95

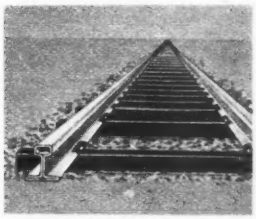
Complete with transformer
Denver and west, $31.45

No. 4904T Pacific 3-Car Freight Train—22 pieces—40½" long. Remote control. Powered by famous Gilbert Electric Motor. Superpower worm drive. Real smoke and "choo-choo" sounds. 3 realistic cars. Automatic coupling. Electric uncoupling. Track makes 140" oval.

Only Trains With Real Smoke and "Choo-Choo" Sounds Synchronized With Train Speed

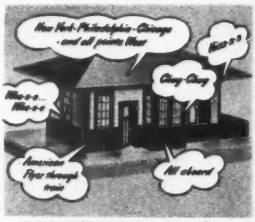
American Flyer—and only American Flyer—brings you both of these realistic features. The smoke is puffed out under pressure. The faster your train goes, the more smoke it puffs. In addition, the realistic "choo-choo" sounds change tone and tempo with every change in train speed.

REALISTIC EQUIPMENT



Real 2-Rail "T" Track

American Flyer track looks like the track of a real railroad. Notice there's no old-fashioned third rail in the middle.



TALKING R. R. Station

Produces true-to-life sounds of busy station. Stops train by remote control—starts it automatically. $16.95. Denver and west, $17.80.

FREE GIANT Train Book

40 big pages. Over 100 color pictures. Shows all 16 American Flyer Trains and spectacular equipment. Mail coupon today.

The A. C. Gilbert Co.
Gilbert Hall of Science
104 Erector Square, New Haven, Conn.
RUSH GIANT TRAIN BOOK—FREE

Name.....

Street.....

City.....State.....

THIS OFFER GOOD ONLY IN U. S. A.

MI Tests the Lea Francis

[*Continued from page* 83]

When we stopped for coffee he told me he had found an ideal American Grand Prix course within spitting distance of Hollywood. This turned out to be a winding, gravel-surfaced, narrow pass, high in the hills. For the benefit of anyone who isn't familiar with Southern California, let me hasten to explain that these "hills" would be called mountains anywhere else. Froy's "course" was just a two-lane shelf, hacked from the sheer side of the hills and topping the crest of others. One slip and you'd be a lead-pipe cinch to hurtle down to some canyon bottom, thousands of feet below.

It was here that Froy really put the show on the road. Once on the mountain pass he pushed the throttle to the floor, shifted gears like greased lightning, and I was hanging on again. I saw the RPM's on the tach climb and climb. The speedometer was 80-plus as we slammed around right-angle, hairpin turns, throwing clouds of pebble dust high and wide.

Froy has literally dozens of Continental Grand Prix and Brooklands championships under his belt, collected during more than 20 years of competition. But as we hit turn after turn at speeds far beyond the reasonable danger point, I couldn't help thinking that he was probably saying to himself,

"I'll show this Yank car tester a few tricks—and scare the pants off him to boot." Well, if this Englishman thought he was scaring me, he was dead right. There were no guard rails on this "ideal" course. I kept wishing I had the undertaking concession.

I never had such a ride in my life—and I never witnessed better car handling. At the end of one complete circuit around the mountain tops (about 11 miles) he turned the car over to me. Froy is a swell guy. But I figured the time was ripe to even things up. On this kind of a ride, it's twice as bad being the passenger. I started off gently and was immensely impressed with the little car's acceleration. As soon as I got the feel, I shot the throttle to the floor and Mr. Froy was holding on.

I slammed into curves that took double and triple skids to come out of—and then I succeeded in practically scaring my English friend right out of his skin. On my tests I am usually very careful to make my speed

[*Continued on page* 144]

Don't just paint it — let's use it!

Remember Weldwood Glue when you need dependable wood-to-wood bonds. Quick and easy to mix with cold water... tremendously strong... stain-free... rot-proof ...and *permanent*. At paint, hardware, variety stores and lumber yards. 15¢, 35¢, 65¢, 95¢ and larger sizes.

WELDWOOD PLASTIC RESIN GLUE

United States Plywood Corporation, New York 18, N. Y.

ALSO HANDY FOR WOOD HOBBYISTS!

Firzite

—to give you smooth finishes on fir plywood and other soft woods.

A pre-finishing material that seals the wood pores...tames the wild grain . . . virtually eliminates checking and grain raising. An excellent base for stain, paint or enamel. White or clear. White Firzite provides an easy, low-cost way to achieve "blond," "bleached" or "wiped" finishes.

Satinlac

—to preserve the beauty of all woods.

An inexpensive coating for the proper finishing of Weldwood Hardwood Plywood and similar woods. Clear. No brush marks. Brings out all the natural beauty of wood. Does not yellow or darken with age.

FIRZITE and SATINLAC are available from paint, hardware and lumber dealers. Write for leaflet No. 4 on finishing plywood.

New SpeedDrill
3/8" Capacity
1/2" Power
1/4" Price
No. 79
3/8" SpeedDrill
$19.95
with the Geared Jacobs Chuck $24.95
Speed Way
GIVE
Speed Way
ELECTRIC TOOLS and TOOL KITS this
CHRISTMAS
No gift more welcome, more useful or longer lasting for the homeowner, mechanic, handyman or craftsman—for the individual or the whole family.
Each SpeedWay Tool does innumerable useful things. All make tedious tasks fun. Encourage creative abilities, foster enterprise, provide useful avocations.
Dad needs SpeedWay Tools for repairing, sharpening, sanding and building.
Mother will use a SpeedWay to clean and polish the easy way.
Sister is apt to go in for art crafts, wood carving or making novelty jewelry.
Brother will become a craftsman, a model builder or a refinisher.
SpeedWay Blue Line Tools are carried in stock by all leading hardware, electrical and department stores. Your local dealer will gladly show them and help you select for self or friends.
No. 89-J
1/2" Drill
$34.95
with Geared Jacobs Chuck
No. 89
1/2" Drill
$29.95
No. 209
Drill Stand
$12.95
Literally hundreds of thousands of SpeedWay tools and kits are in use. They have become more than workmans' tools, they are modern "home appliances."
Combo Kit
$29.50
No. 69K
Drill Kit
$18.95
No. 117
Bench Grinder
$14.95
No. 128 (1/4 h.p.)
Bench Grinder
$29.95
No. 229
Drill Stand
$5.25
No. 69
1/4" Drill
$11.80
No. 129
Hand Grinder
$8.25
G. A. Kit
$13.95
No. 700
SpeedSaw
in steel case
$59.95
All Blue Line Tools are guaranteed for 1 year by SpeedWay—for over 40 years a famous name for quality tools.
SPEEDWAY MFG. CO.
1866 South 52nd Ave. CICERO 50, ILLINOIS

FREE get it now— ALLIED'S NEW 1950 RADIO CATALOG!

196 PAGES OF BIG VALUES

EVERYTHING IN RADIO AT LOWEST PRICES

TELEVISION AND HOME RADIOS

SERVICE SUPPLIES BUILDERS' SUPPLIES

AMATEUR GEAR

AMPLIFIERS, P.A. SYSTEMS, RECORDERS

Send for

Radio's Leading Buying Guide

Save money on every radio need! Get the new 196-page 1950 ALLIED Catalog, preferred and used by everyone in radio. See the world's largest stocks of top-quality equipment, all at low, money-saving prices! Latest TV releases, home radios and radio-phonos, Amateur equipment, PA systems and High-Fidelity Sound, recorders, test instruments, builders' kits—plus thousands of parts, tubes, tools, books and diagrams. Have all the advantages of quick delivery, complete selections, big savings and expert personal help from the World's Largest Radio Supply House. Send today for your FREE copy of the 1950 ALLIED Radio Buying Guide!

ALLIED RADIO

ALLIED RADIO CORP.
833 W. Jackson Blvd., Dept. 6-LL-9
Chicago 7, Illinois

FREE CATALOG

☐ Rush FREE 1950 ALLIED Catalog

Name .....

Address .....

City ..... *Zone* ..... *State* .....

MI Tests the Lea Francis

[*Continued from page* 142]

runs around dawn, on stretches of road and in country where there's nobody stirring. I thought we were fairly safe from traffic up here in the pass. But all of a sudden. . . .

I was coming around one curve, close to wide open, in a long skid, when I saw an old Buick headed straight for me and straddling the middle of the road. At these speeds you cover a hundred yards in an eye blink. I held the Lea Francis in a long, flat slide and saw the Buick stop dead. At the last possible instant I whipped the wheel, spun into a reverse skid and missed the Buick by less than the thickness of a coat of paint.

I stopped. When the Buick's driver regained his composure, his remarks were reassuringly unprintable. I can't say I blamed him. As we drove off, I told Froy in the most casual voice I could muster that I thought his car handled quite well. I believe Froy was wiping his forehead.

In summing up, this Lea Francis is a truly terrific automobile. It has excellent riding characteristics, a rarity in a sport car, and its roadability is unsurpassed. The car is low to the road and though there isn't room enough for a convention of midgets behind the front seat, there is more luggage space there than in many other typical sport jobs.

The upholstery, top and general fittings all reflect the ultimate in craftsmanship. Several engine combinations are available, up to 127 hp which is tremendous for a light car. I sincerely think it's a great automobile and would highly recommend it to anyone in the market for such a machine, provided he has the pocketbook. •

SPECIFICATIONS

MODEL TESTED

Lea Francis (English) 2-seater roadster.

ENGINE

4-cylinder, overhead cam, twin carburetor, developing 94 hp without supercharger.

DIMENSIONS

Wheelbase 99 inches; overall length 156 in.; height (stripped for racing) 3' 7 in. (with windshield and top up) 4' 7½ in.; width 63 in.; clearance 7 in.; tire size 6.00x16; weight 2350 lbs.

TRANSMISSION

4 speeds forward, manually shifted.

PERFORMANCE (McCahill Tests)

0 to 60 mph through gears, 15.7 sec.
10 to 60, in fourth gear (high), 17.1 sec.
Top speed in third gear, 85.5 mph.
Top speed in fourth gear, 102.2 mph.

NOW AT MY RISK! I want you to read the WARNER SUCCESS PLAN

It shows you how to... METALIZE BABY SHOES AND OTHER KEEPSAKES

- **how you can start in spare time with your home as headquarters.**
- **how to build—step by step—to big profits and personal independence.**

This is the famous Warner Success Plan—the Plan for Personal Success in your own fascinating business that many men, married couples credit with freeing them from the limits of a pay check and from the drudgery of a time clock.

It gives the exact step by step instructions for starting a business in spare time—without risking the job or steady pay. It shows with pictures, photographs, and drawings exactly how to Metalize Baby Shoes and other keepsakes. It shows how to get the orders coming in—how to expand—how to get others working for you—how to be SURE of at least twice your present pay before you give up your job for a life of personal independence.

15 Million Prospects

There are 15 MILLION pair of Baby Shoes in the country right now ready to be Metalized. Last year alone, more than THREE MILLION more babies were born. There's not one of these mothers who doesn't want her baby's first shoes preserved forever. The Business is tremendous . . and never ending.

The Warner Success Plan shows you how to turn this exciting opportunity into cash. Shows exactly how to prepare the shoes, how to put on them a coating of genuine *gold, silver, or bronze metal* by simple Warner Electroplating process. Shows how to get the business coming in, how to start in spare time, how to pyramid profits. Shows you how the whole family can have fun while building for an independent future. My own Shop here in Chicago does a Big Business by the very secrets I will now unfold to you.

Read The True Facts

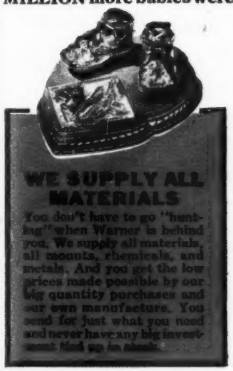
Don't say "Yes" now. You must have ALL THE FACTS. Then decide. First, I want you to read the entire Plan — at my risk. After investigating—after discussing it with your family — then and only then do you decide whether to use the plan and make the small investment necessary to start.

$5.00 An Hour PROFIT

Yes, even in spare time it is possible for a man to finish enough work to pay $5.00 an hour for his time. Think what this can pyramid into when the family helps.

3c MAY START A FORTUNE

Today I want you to do only one thing. Send the coupon. Let me give you all the facts. Remember, what I send you does not cost you a cent beyond the postage you put on your letter to me. With an opportunity like this, a man who has a serious interest in his future MUST investigate. MAIL the COUPON TODAY and see for yourself why so many families have called the WARNER SUCCESS PLAN a "godsend".



WE SUPPLY ALL MATERIALS

You don't have to go "hunting" when Warner is behind you. We supply all materials, all mounts, chemicals, and metals. And you get the low prices made possible by our big quantity purchases and our own manufacture. You send for just what you need and never have any big investment tied up in stock.

MAKE 12 TIMES YOUR MATERIAL COSTS

Remember, the Warner Process is not a cheap imitation "PAINT" process. It is the genuine METALIZING through real Electroplating. And in spite of being the best, your materials cost so little that your profits are 12 Times your material cost. Then, when mothers order the shoes mounted as book-ends, as pictures, as ash-trays or pen sets, you make the BIG EXTRA PROFITS on the beautiful mounts.

WARNER-ELECTRIC CO.
1512 Jarvis Avenue
DEPT. 611
Chicago 26, Illinois

DON'T SEND A PENNY
JUST MAIL THIS COUPON TODAY!

Raymond E. Brandell, Mgr., WARNER ELECTRIC CO.
1512 Jarvis Ave., Dept. 611 Chicago 26, Ill.

As long as it doesn't cost me a cent, I am willing to read the facts, investigate, then give you my decision. Send the facts by next mail. Everything you send now is FREE!

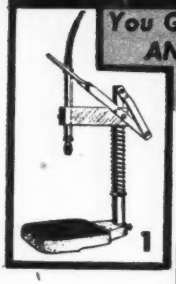
NAME _____

ADDRESS _____

CITY _____ Zone _____ STATE _____

Now! FOREDOM offers 2 NEW ATTACHMENTS

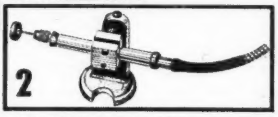
You Get Unexcelled UTILITY AND VERSATILITY . . . AT SMALL COST!



1

DRILL PRESS ATTACHMENT

1. Now Foredom offers you a DRILL PRESS ATTACHMENT for use with Model 100 (see below) and for the many thousands of Foredoms already in use. Handpiece quickly clamps in place and drill press is ready for use, ready to pay for itself over and over again! PRICED AT A MERE $4.95.



2

B-R-S ATTACHMENT

2. The new Foredom B-R-S ATTACHMENT (Bench Stand, Router, Shaper). Speedily clamp handpiece in place and magically you have one unit which serves as a bench grinder with angular adjustment, a router (complete with detachable guide for routing borders) and shaper. Can be used with Model 100 and thousands of Foredoms now in use, providing endless hours of fun and profit. TRIPLE UTILITY FOR ONLY $3.50.

And there's still more - - -

FOREDOM'S NEW MODEL 100 FLEXIBLE SHAFT MACHINE

Model 100 Flexible Shaft Machine with all-metal PENCIL SIZE HANDPIECE equipped with CHUCK GUARD to PROTECT YOUR FINGERS and provide SENSITIVE POSITIVE, FINGER-TIP CONTROL for the most delicate tasks. Husky little high-speed universal motor. Foredom's quarter-century reputation for precision workmanship goes with each machine. Other heavier duty models at proportionately reasonable prices. No. 25 Accessory Set (a truly versatile assortment) $5.50 extra. Also No. 1000 Kit, comprises No. 100 Machine illustrated and set of 12 accessories, all in wooden case for only $21.50. 6-step Foot Rheostat $4.85. USE IT to GRIND, POLISH, DRILL, SAW, SAND, CARVE, MILL, CLEAN, ETCH, ENGRAVE, ETC. on all metals, wood, plastics, glass, leather, linoleum, etc.

FOREDOM MULTI-PURPOSE THREESOME, Comprising Drill Press Attachment, B-R-S Attachment, and Model 100 Flexible Shaft Machine—only ------ $24.95

35" FLEXIBLE SHAFT **$16.95** COMPLETE WITH MOTOR

3.

And here's another Amazing Foredom Product

FOREDOM PRESTO-FLEX with PENCIL-SIZE handpiece

Quickly Converts Motors or Drills into Flexible Shaft Tools **$5.95**

Now turn your old motor, drill press or electric drill into a Flexible Shaft Tool. Simply attach it and presto—a flexible shaft machine! Off again in a jiffy! Pencil-Size handpiece gets into tight places. Handy 35" overall length. And - - only $5.95 complete! Precision made. Order NOW. If ordered for use on motor, specify motor shaft diameter and add 50c for coupling (Available for ¼, 5/16, ⅜, and ½" shafts). No. 50 Accessory Set available $1.50 extra. Order TODAY, at your dealers or use coupon below.

SEND NO MONEY

FOREDOM ELECTRIC CO., Dept. 3022-E
27 Park Place, New York 7, N. Y. — **Mail Coupon Now!**

Please send me FOREDOMS checked below on 10-day trial

- ☐ Drill Press Attachment ($4.95)
- ☐ Presto-Flex Tool ($5.95)
- ☐ Motor Coupling (50c) Specify motor shaft dia.
- ☐ No. 100 Machine ($16.95)
- ☐ Multi-Purpose Threesome ($24.95)
- ☐ B-R-S Attachment ($3.50)
- ☐ No. 50 Accessory Set ($1.50)
- ☐ No. 25 Accessory Set ($5.50)
- ☐ Foot Rheostat ($4.85)
- ☐ No. 1000 Kit ($21.50)
- ☐ Free Catalog

☐ Send C.O.D. plus postage. I will pay postman.
☐ I enclose payment. Send postpaid.

(MONEY BACK EITHER WAY IF NOT DELIGHTED)

NAME _____
ADDRESS _____
CITY & ZONE _____ STATE _____

FINE TOOLS NEED FINE OIL!

- Lubricates
- Prevents Rust
- Cleans • Polishes

SOLD EVERYWHERE

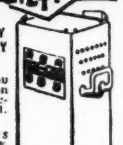
3-IN-ONE Oil

ARC WELDING FOR PROFIT OR PLEASURE

60 LBS. OF READY MADE PARTS Only $24.95

BUILD YOUR OWN HEAVY DUTY WELDER

SAVE BUY ONLY NECESSARY PARTS



All parts Ready-Made and easy to assemble. You can do all around welding on steel, cast iron and other metals after only a few hours practice. Illustrated instruction manual included. Sold on 30 Day Money-Back Guarantee!

FREE: Write today for fully illustrated Pamphlet K-11.

Gives 100% penetration. Welds are stronger than original metal. Operates on 110 or 220 AC.

ATOMIC ARC WELDER CO.
1035 So. 19th St., OMAHA, NEBR.

WORLD'S LOWEST PRICED ADDING MACHINE

Vest Pocket Size FREE TRIAL

IDEAL XMAS GIFT! **$2.95** only

GUARANTEED ACCURATE. Not a toy. Operates with only a finger flick. Adds, subtracts, multiplies, divides. Counts up to one billion. Pays for it-self over and over. Ideal Gift—for Business, Income Tax and School use. MONEY BACK GUARANTEE. Send name and address. Pay postman only $2.95 plus postage. (Send full cash if outside U.S.) Beautiful rich-looking Leatherette Case included at no extra cost. Money back in 10 days if not delighted. AGENTS WANTED.

TOTAL COST SEND NO MONEY

CALCULATOR MACHINE CO., (Mfrs.)
Dept. 355 P. O. Box 248 — **Glenview, Illinois**

MODERNIZE WITH Chromtrim

"Trim-it-Yourself"

METAL MOULDINGS

REMODEL KITCHEN · BATH · ATTIC

MAKE METAL PROJECTS WITH CHROMTRIM

Chromtrim is easy to cut, bend and apply. It's the perfected metal for trimming all surface covering materials — linoleum, tile board, etc. 8 shapes 6' lengths.

FREE —"Trim-it-Yourself" folder.

R. D. Werner Company, Inc.
295 Fifth Ave., New York 16

Please send me the FREE "Trim-it-Yourself" folder. MI-10

Name _____
Address _____
City _____ Zone _____ State _____

Bronzing Baby's Shoes

[*Continued from page* 138]

of the compound when it is brushed evenly over the shoes. After the shoes are completely dry, *gently* wipe them with a damp cloth. This will wipe the green coloration from the highlights but allow it to remain in the hollows. The sections from which the green has been removed will have the brown color. Dry the shoes and coat them with the protective lacquer mentioned.

If you wish to make a photo statuette, a thick walnut base in the required size is suggested. One edge is recessed for the statuette. Finish it with one coat of lacquer sealer and two or three coats of clear lacquer; rub it down well and then apply a coat of furniture polish.

An enlarged photograph is glued to a piece of thin, sturdy material, such as black Masonite, and the figure cut from it as shown in the photograph. •

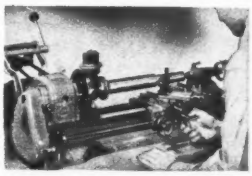
Music Goes 'Round

[*Continued from page* 128]

45-r.p.m. disk, shift to 45 on the turntable, plug in the special 1½-inch adapter spindle, and let it roll.

If you're perfectly happy with your prewar phono-radio combination and don't feel inclined to invest money in a new two- or three-speed player, you won't be missing a thing. Both Columbia and RCA have announced that 78-r.p.m. duplicates will be made of all new recordings.

Columbia and RCA-Victor advance excellent reasons for their choices of record speeds. Mostly, they're very technical and are tied up with the distortion effects that occur at different speeds in relation to the diameters of the grooves. As far as quality of reproduction is concerned, I doubt if one listener in ten thousand could detect any appreciable difference between the two makes. When you get down to it, the RCA 7-inch 45-r.p.m. record, playing five minutes, is virtually identical with the Columbia 7-inch 33⅓-r.p.m. "Long-Playing" disk, which also runs five minutes; RCA just doesn't use the term *long playing*, because a five-minute record certainly is not a long-playing one. The 13½- and 22½-minute Columbia records are something else. For classical music, they undeniably are wonderful. Personally, I am of the opinion that RCA-Victor isn't much concerned about the high-brow trade and figures that it can do plenty of business with the many more people who go for the popular stuff. Pay your money and take your choice! •



This Atlas 6" lathe is America's lowest priced precision lathe. If your work comes within its 6" swing, 4⅛" over carriage, and 18" between centers, you can machine just as quickly and accurately as on a larger lathe—and save many dollars. It has the same thorough engineering as the Atlas 10" lathes. It is built to the same precision standards—checked by the same performance tests. Large bearing surfaces assure long-lived accuracy under heavy loads. Ask your Atlas distributor, or send for latest catalog, for full details.

*Price F.O.B. Kalamazoo, less motor.

ATLAS PRESS CO.
1152 N. Pitcher St.,
Kalamazoo, Mich.

Atlas POWER KING

MATCHED PRECISION TOOLS FOR MACHINING AND WOODWORKING

Pint Sized Power Miracle

Complete Super Power Tool Kit—Only

$18.55

Contains power unit with cord, 5 abrasive points and cutting burrs, full operating instructions—all in one case.

New Duro Super Power Unit—the tool you'll use in a 1000 ways!

This is the kind of lightweight, perfectly balanced hand power tool that hobbyists and home craftsmen dream about! A compact fistful of super power, it runs cool and smooth at 20,000 RPM, develops 42 watts output. With it, you can do clean, professional-looking sanding, polishing, grinding, engraving, carving . . . and scores of other operations.

Start with this low cost tool kit and build a complete home workshop! One Duro Super Power Unit is used on all of these home workshop tools! You may buy them singly—or in a group.

Ball Bearing Flexible Shaft Doubles the Fun

New Duro flexible shaft fits over nose-piece of power unit, makes free-hand carving, engraving lots more fun. Flexible shaft, complete with hanger, only.....$15.55

Write for Free Illustrated Circular giving full details about the Duro Super-Power Unit and the low cost workshop units. Circular also shows almost a score of pictures and details about operations that you can do with these amazing power tools.

DURO METAL PRODUCTS CO.
2653 N. Kildare Ave., Chicago 39, Ill.
Gentlemen: Send me free circular giving full details on the Duro Super-Power Unit and the low cost workshop units.

Name.....

Address.....

BURR HAND SAW FILER

Makes More PROFITS

Fast, accurate, will file from both sides. Operator controls file arm. No saw carrier or adjusting screws to fuss with. A money-maker in any shop.

BURR MFG. CO.
8935 VENICE BOULEVARD
LOS ANGELES 34, CALIF.

WRITE TODAY!

U-MAK-IT BOAT KITS

EASY TO BUILD

5 ROWBOATS 8 TO 14 FT.
6 OUTBOARDS 12 TO 16 FT.
3 INBOARDS 16 TO 23 FT.
& CABIN CRUISER

SEND 25c (coin) ORDER YOUR CATALOGS TODAY
U-MAK-IT PRODUCTS 703A—WHITTIER ST. New York 59, N. Y.

NEW QUICK-CLAMP 30" BRAKE

Forms angles, flanges, seams. Bends 26 gage steel. Heavier copper and aluminum. Cam locking. Portable, can be clamped to edge of truck. All steel. Shipping wt. 42 lbs. Shipped express collect. 30" size **$24.50**

12" BRAKE. Fits in vise to form difficult compound bends, up to 20 gage steel. **$12.50 PP.**
CUTTER. Cuts 18 gage steel any length and width, **$12.50 PP.**
SHEET METAL PLIERS. 2½" wide, **$3.00**; 5", **$3.00.**
PLASTIC BAR BENDER. ¼x8 capacity **$1.00**
IRON BENDER. Forms hooks, braces, eyelets. Bends ¼x2, **$10.00.**
Immediate delivery. Order direct, cash or C.O.D., or send for folder.
VISE BRAKE MFG. CO. X1116 So. 27th St., Omaha 5, Nebr.

ALNICO MAGNETS LIFT 125-lb

AMAZING PERMANENT MAGNETS—WILL NOT WEAKEN! NON-ELECTRIC. Retrieve guns, tackle, tools and other steel items from lake, river, plating tanks, drains or other hard-to-reach spots. Recover drills, taps, etc. from floor sweepings. Clear alley of harmful tacks, nails. Many other uses listed. Pays for itself quickly. GUARANTEED: Try any magnet one week. Money refunded if you are not well-pleased!
Cat. #M430 (Has a pull of 125 lbs. on a flat steel block).....$7.50
Cat. #M410 (40 lb. pull)....$2.50 Cat. #M528 (10 lb. pull)....$1.10
Cat. #M500....Hobbyist's assortment of seven small magnets....$1.10
RONALD EYRICH, 2566 N. 49th St., MILWAUKEE 10, WIS.

WHEELS AT BARGAIN PRICES

4" Wheel, 1/2" Tire, 5/16 Steel Bearing	$0.45 ea.
5" Wheel, 5/8" Tire, 5/16 Shaft Hole	0.65 ea.
6" Wheel, 5/8" Tire, 5/16 Shaft Hole	0.75 ea.
7" Wheel, 3/4" Tire, 3/8 Shaft Hole	0.85 ea.
8" Wheel, 1" Tire, 1/2" Shaft Hole	1.25 ea.
8" x 1.25" Wheel, semi-pneumatic, 7/16 ball bearing	2.00 ea.
8" x2" Wheel, semi-pneu., 7/16 Ball Bearing	2.25 ea.
10 x 1.25 Wheel, semi-pneu. 7/16 BB	2.50 ea.
10 x 1.75 Wheel, semi-pneu. 7/16 or 1/2 BB	2.75 ea.
10 x 2.50 Wheel, semi-pneu. 1/2 or 5/8 BB	4.50 ea.
10 x 2.75 Wheel, semi-pneu. 1/2 or 5/8 BB	4.95 ea.
10 x 2.75 Wheel, single tube pneu. 5/8 BB	5.50 ea.
12 x 1.75 Wheel, semi-pneu. 7/16 or 1/2 BB	3.25 ea.
6 x 2 Wheel, solid tire, 3/8 Ball Bearing	2.95 ea.

Write for complete "FREE" list—includes Industrial, trailer, wheelbarrow, sizes, etc. To order above wheels, send this ad with check or money order and your name and address.

T & H MFG. CO., Inc., 811 East 31st, Dept. WIA11, K. C., Mo.

NEW for 1950

MIDWEST

Celebrates its 30th YEAR of FACTORY-TO-YOU Selling with a Sensationally NEW 1950 LINE of

TELEVISION

CONSOLES and Complete CHASSIS

New GIANT 16" PICTURE

Here is Television at its finest! . . . brought to you by Midwest, for 30 years a leader in the field of radio and electronics. Immense 151-square-inch screen on new 16" metal-glass tube . . . clear, steady, bright pictures . . . Synchronized sound and picture that a child can tune in perfectly . . . Highest quality FM sound . . . Big 12" Electro-Dynamic Panasonic Speaker. Available in beautiful Television-Radio-Phonograph Consoles, as illustrated, or in complete chassis (not a kit) ready for custom installation in your own cabinet. And you can buy Midwest Television at Low Factory Prices, with Low Down Payment and Long Easy Terms —and on 30 Days Trial! Send for Catalog TODAY!

NEW LOW Down Payment Long EASY TERMS

LOW FACTORY TO-YOU PRICE

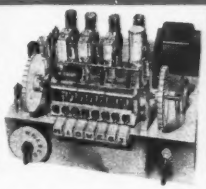
30 DAYS TRIAL

. . . also a Magnificent Line of NEW 1950

MIDWEST RADIOS

featuring the latest Improved FM Circuit and the New 3-SPEED RECORD PLAYER

Powerful new 1950 Series 16 and Series 12 AM-FM Radio in complete chassis. Also beautiful new Console models including the magnificent Symphony Grand Radio-Phonograph with latest FM circuit and new 3-Speed Automatic Record Player.



BUY DIRECT FROM THE MIDWEST FACTORY and SAVE!

MIDWEST RADIO & TELEVISION CORP.

Dept. X413, 909 Broadway, Cincinnati 2, Ohio

SEND FOR FREE 32-Page Full Color CATALOG

Write in Name and Address (Please Print) on Coupon or 1c Postcard.

MIDWEST RADIO & TELEVISION CORP.
Dept. X413, 909 Broadway, Cincinnati 2, Ohio
Please send me your new FREE 1950 Catalog.

NAME_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

Whisker®

THE ELECTRIC SHAVER THAT'S

SOLD BY BARBERS

ONLY $12.95 RETAIL

NOW! SMOOTH, CLOSE SHAVES . . . FOR THE MAN WHO SHAVES ONCE A DAY—OR, ONCE A WEEK

Barbers know a good shave when they see one. That's why they recommend and sell WhiskER. WhiskER whisks away any length beard, clean as a whistle, without pulling or stalling. It uses a time-tested hair clipping principle, with an extremely close-shaving blade. Operates quietly on 110 v, 60 cycle AC; no radio interference. The next time you visit your barber or beautician ask to see the WhiskER. If he does not have WhiskER, he can order it for you on a 5 day trial.

MADE BY WELL KNOWN MANUFACTURER OF QUALITY BARBER AND BEAUTY TOOLS

. . . that's your guarantee of a precision product and long, satisfactory performance Ladies: Buy WhiskER at your favorite beauty shop for gifts or for personal depilatory use.

ELECTRO TOOL CORPORATION

DEPT. 889-K • RACINE, WISCONSIN

Mortite KEEPS THE COLD OUT

SAVES FUEL AND MONEY

Cordlike and pliable, Mortite is the perfect weatherstripping. Goes on in a jiffy without tools or tacks. Keeps out wind, dust, dirt. Anyone can press it around windows, doors, transoms, baseboards. Weatherstrip a whole window for 29c—costs even less if you use the larger package. Get Mortite at stores or write for circular. J. W. Mortell Co., 548 Burch St., Kankakee, Ill.

MYSTERIOUS DEVICE WELDS BRAZES SOLDERS & CUTS

ANYONE CAN OPERATE

This newly invented FOUR-WAY PORTABLE ELECTRIC WELDER will do brazing, soldering, welding and cutting on brass, bronze, iron, steel, cast iron and other metals. It's easy to use. WORKS INSTANTLY off any properly wired 110 VOLT A.C. OR D.C. LINE. Does a thousand and one professional type repair jobs. SAVES TIME AND MONEY on auto, home appliance, farm and shop repairs. Ideal for maintenance men, farmers, repair shops, engineers, tin smiths, home and auto owners, bicycle and fix-it shops. **10 DAY TRIAL OFFER.** COMES COMPLETE WITH ALL SUPPLIES READY TO OPERATE including instructions. FULLY GUARANTEED. Order today for 10 DAY TRIAL or write for FREE particulars. **FOUR-WAY WELDER CO., Dept. MF-119 2326 So. Michigan Ave., Chicago 16, Ill.**

AUTOMOBILE RACING BOOK (Fifth Edition Revised)

12 Chapters, 77 Illustrations dirt track, championship and midget cars. How to build engines, chassis and bodies. Why the fast ones are fast and how to make them fast. How to speed up Ford V-8 cars and rebuild Ford A and B engines. How world's record cars are built. Official AAA midget rules and international formula. Order NOW! $1.00 Postpaid; $1.40 C. O. D. Money back if not satisfied.

RAY F. KUNS Dept. A-47 Cincinnati 27, Ohio

Pioneers AIR RIFLES **BENJAMIN** AIR PISTOLS Leaders

WITH SAFETY LOCK

SEND FOR FREE FOLDER OF LATEST MODELS TODAY

If you want a REAL GUN for PRACTICAL USE inside or outdoors, get a SAFE—CLEAN—ECONOMICAL—BENJAMIN with Adjustable Power and Amazing Accuracy. Use BENJAMIN H-C PELLETS for BEST RESULTS in all rifled models. WRITE AT ONCE.

BENJAMIN AIR RIFLE CO., 814 MARION ST., ST. LOUIS 4, MO.

4 SPEED MOTOR

APPROX. 11 in. LONG

WITH 1000 USES!

The built in integral gear box has four ¼" drive shafts turning simultaneously at the following speeds:

4000 RPM for grinders, buffers, small drills, flex shaft tools, etc.
150 RPM for wrapping fishing rods, driving pumps, slow speed tools, fans.
25 RPM—rocker for photo developing tray, cabinet makers glue wheel, erector sets, film puller for 16 mm. developer, operating laboratory equipment, etc.
5 RPM for turning barbecue spits, advertising displays and antennas.

A THOUSAND OTHER USES AROUND THE WORKSHOP

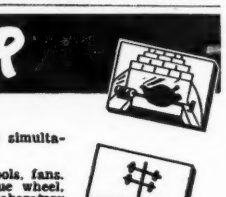
This 1/20th HP, 115 V., 50/60 cycle, AC motor is precision built throughout.

Fully guaranteed—Money refunded if not satisfied

Pulleys, belts, shaft couplings, Mandels and other equipment at 15c to 60c. List sent with motors. SPECIAL—while they last.... $9.95 postpaid

Californians please add 22c sales tax

- For amateur beam & television antenna
- Drives working models, toys and gadgets
- For action displays, miniature fountains
- For doctors, dentists, jewelers, technicians



TROUP ENGINEERING CO., Dept. 211, 3201 E. Pacific Coast Highway, Long Beach 4, Calif.

MI Static Eliminator

[*Continued from page* 130]

There is nothing to fear, when working with this material, but it certainly requires respect. Do not have any undeveloped film or paper near where you are working with the bare strip. *Do not fondle the strip.* You can place it where you want to and move it around into position, but when you pick it up, put it down without holding it. If you want to carry it any distance, place it in a paper bag and carry the bag from the top so your hand will not be too close for any length of time. The strip won't hurt you as long as you don't get too friendly with it.

Now for installing the strip. Remove lead block B and place it on your bench with the slot facing up. With the block in this position, place the Ionotron strip in the bottom of the slot. The strip is 5 in. long so that when centered it will measure 1 in. from each end. Now bend two small strips of sheet brass so that when screwed into the lead at each end of the strip, the brass can be bent over the end of the Ionotron strip to hold it in place. You can now reassemble the static chaser. A lever will be needed to open the door from the left or hinge side. A U-shaped piece of stiff wire pushed into holes in the hinge edge of the door will do the trick. Keeping the door closed is accomplished by a rubber band stretched between a small hook slipped under the rear upper bolt going through the lead blocks and the screw eye on the corner edge of the door. The ends of the ½ in. slots are still open, but these can be closed with lead plugs cast or cut to fit the holes. They should be an inch long with an offset so that they will fit over the screw holding each end of the Ionotron strip. These plugs will have to be removed to dust the surface of the strip, so sink a small knob into the end of the plug. A coat or two of enamel over the outside of your static chaser completes the job.

You are ready now to put your new gadget to work. Locate it between your enlarger and the place you use to inspect and clean your film before putting it in the film carrier. Dust or wipe your film and slip it into the narrow slot between the brass plates at the top of the chaser. The film falls down the slot until the lower edge hits the door on the under side. When the film comes to a stop lift the wire door lever with the left hand. This will drop the film into your right hand. If your film was clean when it passed into the slot, it will come out clean and will be free of any positive or negative charge to attract dust or lint in the air. It will stay that way until too much moving about recharges it. You can now go ahead with your printing. •

The Sensational

BURGESS vibro-sprayer

Only $12.95 Complete

Makes Painting Easy! Faster Than A Brush! Fully Guaranteed!

Sprays enamel, lacquer, varnish, shellac, even insecticides! Thousands of these amazing electric sprayers sold, and hundreds of testimonials from people who have painted screens, chairs, fences, room interiors, basement floors, cars . . . even houses, offer convincing proof that Burgess Vibro-Sprayer is your answer to difficult painting jobs around the house. Entire unit is held in the hand, weighs only 2½ lbs. *No extras to buy.* Just plug into any 110 volt socket and spray-paint. Full information on request.

2 Useful Tools For YOUR Home

The Amazing

BURGESS vibro-tool

Only $9.95 Complete

Master Craft Kit

Writes like a pencil on hardest steel, glass, plastics, wood or ceramics. Permanently identifies tools and other equipment around home against loss. A fine tool for craftsmen who engrave steel or glass, tool leather, cut linoleum or wood blocks for printing, emboss metals or foil, mark laboratory equipment. Master Craft Kit with full set of attachments shown does everything, only $9.95. Leather Craft Kit also available, same price. Tool with hard marking point only $7.50. In colorful, sturdy, storage boxes! Full information on request.

Either item makes a wonderful, inexpensive gift.

Burgess Battery Company, Handicraft Division
182 Rand Road, Lake Zurich, Ill.

BURGESS

Gentlemen:
Please send me full information on

- ☐ Burgess Vibro-Sprayer
- ☐ Burgess Master Craft Kit
- ☐ Burgess Leather Craft Kit
- ☐ Burgess Vibro-Tool and Point

My Name_____

Address_____

City_____ Zone_____ State_____

60 Cycle
110-120
Volt AC

NOW SHARPEN ALMOST ANYTHING *WITH ELECTRIC* HONE!

Pictures SHOW YOU how brand-new SYNCRO Electric HONE SHARPENER STARTS sharpening where ordinary electric sharpeners STOP! The ONLY Electric HONE with 14,400 strokes a minute! Invaluable for workshops, homes, kitchens, cafes, industry! A novel Gift. No belts, gears, wheels. HONING is best, safest way. SYNCRO comes with 3 Honing Stones, cord, plug, switch.

HOW TO GET YOUR SYNCRO: At your dealers. If dealer hasn't Sharpener, order direct from factory. Send full amount, we'll ship PREPAID.

DEALERS! Write for SYNCRO'S "BIG 3" Profit Facts.

SYNCRO
QUALITY ELECTRIC PRODUCTS

SYNCRO CORP., DEPT. HR-119, ROCHESTER, MICHIGAN

World Famous EASY TO ASSEMBLE
PACKAGED BOAT KITS

18 models — 8 to 18 ft. 1949 line—many new models—increased performance—simplified assembly. All parts precut, frames preassembled. Send 25c (coin) for literature. Literature plus booklet, "Plywood Boats," $1.00.

BOAT PATTERNS-BLUE PRINTS

100 designs by Deed, Lord, Crandall, etc.: plank, steel, and plywood types 6-35 ft. Detailed blueprints, full-size paper patterns. Catalog 35c (coin). Catalog and booklet, "Boat Building," $1.00.

MARINE MART-DEPT. 25-BUFFALO 7, N. Y.

BUILD ARC WELDER FROM OLD GENERATOR

WE SHOW YOU HOW
Light or Heavy Work

Produces 75-200 amperes. Takes no previous experience or hard work to make one of these welders. Complete plans 35c. Send for your **PLANS** today and we'll include FREE our Big NEW Catalog listing hundreds of electrical bargains.

LEJAY MFG. 1314 LEJAY BLDG. MINNEAPOLIS, MINN.

HUNDREDS OF ITEMS AND IDEAS FOR THE **WOODWORKER**

HARD TO FIND LUMBER
Top Grade Kiln Dried
A Board or a Carload

BIG NEW 144 PAGE CATALOG NO. 16
of hard to find woodwork items, hardware and supplies; the finest craftsman catalog Harold Hunt ever published—32 rare and fancy woods in natural colors—also in color, 43 matched veneer designs, multi-colored bandings, inlays, overlays, scroll patterns, etc. Price 15c, rebated on first order.

UNEQUALED BARGAINS
Walnut. Mahog. Cherry. Maple. Wh. Hard And Soft. Poplar Pl-Qtr. Oak. Aromatic Red Cedar.

CRAFTSMAN WOOD SERVICE CO.
8720 S. Mary St. Dept. G-11 Chicago 8, Ill.

BOYS! This coupon may send you to college!

It gets you started on a model car that can win a $4,000 University Scholarship—a cash award—a tool chest — or all-expense convention trip! It's your first step in the 1950 Fisher Body Craftsman's Guild Competition — 734 awards — $65,000!

SEND COUPON NOW FOR **FREE** Guild membership! Craftsman's button and card! Plans on building model!

IF you were between 12 and 20 years of age on Sept. 1, 1949, this may be the biggest thing in your life.

For in the 1950 Fisher Body Craftsman's Guild Competition, you've a chance to win one of 8 University Scholarships, worth up to $4,000. Also—expense-paid trips, generous cash awards, tool chests—altogether 734 awards worth $65,000.

No Entry Fees! No Special Tools! Send in the coupon for your FREE membership in the Guild, FREE Craftsman's button, FREE instructions. Then, using balsa or any suitable material and the simplest tools, you simply make a solid scale model of your idea of a modern car.

So Get Started Now! It's not work—it's fun! Fill in and mail that coupon. It may make a college man of you!

LOOK AT THESE AWARDS

8 University Scholarships—worth from $1,000 to $4,000 each. All-expense trips to the Guild Convention. Cash awards—up to $150 each. Model Builders' Tool Chests.

A Grand Total of 734, Worth $65,000

Identical awards for Juniors and Seniors

(If the son of a General Motors employe wins, a duplicate award is given.)

LOOK AT THE EASY RULES

You're eligible if you were at least 12 but not yet 20 years old on Sept. 1, 1949. You compete against boys in your own age group—there is a Junior Division (12 to 15 years inclusive) and a Senior Division (16 to 19 years inclusive). You build a solid model of a car. No special tools needed.

FISHER BODY CRAFTSMAN'S GUILD, Dept. K
General Motors Building, Detroit 2, Michigan

Please enroll me in the Fisher Body Craftsman's Guild Competition for 1950. Also — send the Craftsman's button and membership card plus complete instructions for building a model. All this will be sent FREE and without obligation to me.

Name_____

Address_____

City and Zone_____ State_____

I was born on the_____ day of_____, 19____

Parent or guardian_____

Name of my school_____

Town_____ State_____

Amateur Telescope

[Continued from page 134]

consists of a piece of brass tubing to slide in the eyepiece tubing. Recessed in my tube camera about ⅛ in. from one edge I have inserted a large washer, against which a small piece of cut film is pressed. It is held by the corners. A suitable stop is put on the tube so it may be inserted only the right amount previously determined by ground glass focusing. For exposure I hold a piece of black paper over the inside opening of the eyepiece tube until the "camera" is in place. By withdrawing the paper for the shortest possible instant the exposure is made. In fact, my negatives "come up" in from 30 to 45 seconds, using process film, which is excellent for contrast and fine grain.

Readers desirous of delving deeper into the fascinating hobby of astronomy should be interested in *Telescopes and Accessories* by Dimitroff-Baker and *Our Sun* by Donald Menzel. The first book is a rather technical treatise discussing telescopes and their auxiliary instruments. An appendix showing the diffraction images of stars under different conditions is especially interesting. The second book is an evaluation of our sun and its effect upon the habits of man. The story of how eclipses are recorded by scientists is especially fascinating. •

HIGH POWER TELESCOPE

60 POWER-ALUMINUM TUBES-OPENS TO 33"

Variable Power Eyepiece Adjustable to 15X, 30X and 60X.

$4.50 Leather Case Included

5 Sections. 4 Ground & Polished Lenses. Also used as 50X Microscope. Ready to use, only $4.50 POSTPAID.

BROWNSCOPE CO. Dept. 11L, 24 W. 45th St. NEW YORK 19, N. Y.

EVERYTHING For The AMATEUR

TELESCOPE MAKER

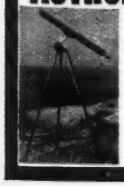
Make your own telescope. Quality supplies guaranteed. Complete 6" kit $5.50 up. Pyrex mirrors made to order. Aluminizing. Prisms—eyepieces—etc. Free catalog. Instructions—10c.

PRECISION OPTICAL SUPPLY CO.

1001 East 163rd St., New York 59, N. Y.

☆ **GIANT** ☆

ASTRONOMICAL TELESCOPE



Ready for use. 6 ft. tripod. 100 diameters magnification. (10,000 area magnification). Extra eyepiece especially suited to observing Milky Way, Nebulae, Comets, Double Stars and Star Clusters. 8mm projector lens for watching sun spots. Full power and clear vision guaranteed. $15.00. 25% deposit on C.O.D. orders.

Shipped via Express F.O.B. Manorville

SUFFOLK SCIENCE SERVICE

DEPT. AT MANORVILLE, N. Y.

OWN YOUR BUSINESS

Start in Spare Time with a

FOLEY SAW FILER

Here is a steady repeat CASH business you can start at home in your basement or garage, while you are working at your regular job. No experience is necessary to turn out perfect cutting saws—"the first saw I sharpened came out 100%. I think the Foley Saw Filer is a marvel of perfection," writes Clarence E. Parsons. Every saw you sharpen will bring you new customers. You will find you can make up to $2 or $3 an hour—$20 to $30 a week in your spare time as a starter.

With a Foley Saw Filer you can file all hand saws, also band and cross-cut circular saws. It is easy to operate—simple adjustments—no eye-strain. Patented jointing principle evens up all irregular teeth and makes an old saw cut just like new.

This Free Book Shows How to Start

"INDEPENDENCE AFTER 40!" shows you how to get plenty of saws to file without canvassing, and how you can develop into a general repair shop that will be your own business. This is a helpful, practical book that tells just what to do—send for your free copy today.

Send For **FREE BOOK**

FOLEY MFG. CO., 1115-9 Foley Bldg., Minneapolis 18, Minn.

Send me free book "INDEPENDENCE AFTER 40!"

Name_____

Address_____

LOWEST PRICED ENGINE IN HISTORY

REAL DIESEL ENGINE

$2.95

✓Check these Superior Features:

✓**DEEZIL is an ultra precision engine,** as carefully machine-tooled as GIANT Army engines. Cylinder is honed to .0001 inch, and hand-fitted to its individual pistons.

✓**DEEZIL is compact, rugged, streamlined.** Starts quickly. Easy to install. Will run for years without attention.

✓**DEEZIL is perfect power plant** for planes, boats, race cars, and experiments. (Runs at 7500 R.P.M. Produces 1/7 HP) Weighs only 5 oz.

✓**DEEZIL is easy to assemble.** No ignition headaches. Step-by-step instruction sheet included with kit.

FROM Detroit, Mich., T. H. G. says—
*"You would never believe that for the low price DEEZIL engine***you have such a smooth running engine***starts so easily so trouble at all. Thanks."*

FROM East Chicago, Indiana R. J. B. says—
"Truly I am very well satisfied, and you can chalk me as one of your many satisfied customers."

SEND $2.95 plus 25c postage today

GOTHAM HOBBY CORP., Dept. M, 107 East 126th St., New York 35, N. Y.

Easy and Cheap to Operate

SAVE TIME, WORK, MONEY!

SHAW "DU-ALL" and "PEPPY PAL" TRACTORS

PLOW

CULTIVATE

MOW

RIDE

These rugged walking or riding tractors ideal for farm, truck garden, orchard, poultry farm. They operate on a few cents an hour. A child can handle them.

DO DOZENS OF JOBS

The Shaw Du-All or Peppy-Pal does many jobs quickly and easily. Plows, cultivates, harrows, disks, bulldozes, sprays, hauls, grinds, and saws wood.

BUILT FOR RUGGED WORK

Sturdy, extra-strength construction means low upkeep, long life. Full year's guarantee.

LOW FACTORY PRICES

Buy direct or through your dealer! Almost anyone who owns a garden can afford a Shaw Du-All or Peppy Pal. Mass production holds prices down —quality up.

RIDING TRACTORS

4 models, from 5 to 12½ H. P., 68 in. wheelbase, 36 in. wide, 24 in. plant clearance. Hand or electric starter. Improved steering device, brakes enclosed in differential housing. Heavier frame and bearings. Standard hitch for trailers and wagons. Plow, harrow, cultivator, cutter bar, snow plow, bulldozer available.

FREE: Illustrated folders giving complete details and price lists—write today!

2911 Front St., Galesburg, Kan.
668ME North 4th St., Columbus, O.

SHAW MFG. CO.

A $50 A DAY BUSINESS IN YOUR SPARE TIME

FREE BOOK

Take BELSAW Portable Sawmill right to the trees—turn out valuable lumber for local yards—do "custom sawing" for neighbors. BELSAW lasts a lifetime. No crew needed. Power with old auto engine or tractor. Beginners get excellent results. $62.50 down. Send postcard for FREE BOOK, "How To Make Lumber."

BELSAW MACHINERY CO
W Field Bldg., 315 Westport Rd, Kansas City 2, Mo

Print Your Own

Cards, Stationery, Advertising, labels, circulars, photo and movie titles, church work, tags, etc. Save money. Sold direct from factory only. Raised printing like engraving, too. **Print for Others, Good Profit.** Have a home print shop. Easy rules supplied. Pays for itself in a short time. Write for free catalog of outfits and all details.

KELSEY PRESSES. N-9. Meriden. Ct.

CRAFTS FOR THE AMATEUR AND THE EXPERT

Crafts for all

Hundreds of practical projects in leather, copper, brass, wood, clay, plastics. Decorate fabrics, carve wood, etch glass, make jewelry. Send dime today for your copy of our fully illustrated 48-page catalog for the craftsman.

BEAVER CRAFTS Inc. Dept. J-3
11558 S. Wentworth Ave., Chicago 28, Ill.

New HOBBY-TOOL GRINDER

More power . . . more capacity . . . More value for your money!

Here's the light-weight, popularly-priced handgrinder that really has "guts" (see graph) . . . handles all 1/8" and 3/32" mounted accessories . . . gives you all the smooth trouble-free performance you've come to expect from Dumore. You'll be proud to work with . . . proud to own the Hobby Tool!

- Full 1/40 h.p. Dumore Motor . . . 20,000 r.p.m.
- Highest maximum power.
- Most power on continuous duty.
- Handsome styling . . . a beauty!
- Push-button tool lock . . . no wrenches.
- Handy, fast thumb switch.
- "No-tire" shape fits your hand.
- 1/8" and 3/32" chuck capacity.

Hundreds of uses in your shop and around the house. See it at your hardware dealer, or mail coupon today.

CUT COUPON AND MAIL TODAY

The DUMORE COMPANY

Dept. L-60, Racine, Wis.

☐ Please send complete information on the NEW Hobby-Tool Handgrinder.
☐ Send me DeLuxe Hobby Tool with 50 accessories (as illustrated): $23.50 enclosed.
☐ Send me Standard Hobby Tool with 2 accessories: $16.50 enclosed. (All shipping charges C.O.D.)

NAME.....
ADDRESS.....
CITY..... ZONE..... STATE.....

DHT-1

SAVE MORE THAN ½ PRICE

for only

10 FT. PRE-BILT ROW BOAT **$59.50**

(Reinforced for Outboard Use)

STRONG ONE-PIECE BOTTOM, ALL PARTS PERFECTLY CUT FOR EASY ASSEMBLY WITH SIMPLE TOOLS IN A SINGLE DAY.

Also 12 and 14 ft. deluxe, decked V-Bottom Models

Write BAY STATE BOAT CO.
29 Main St., Cambridge, Mass.
for name of nearest dealer.

30 Early American Designs

25¢ a packet of 15 plans

New designs . . . Early American pieces adapted to modern living . . . in 2 series, A and B. Each packet contains 15 sheets, 8½ x 11", with photos and working drawings. Easy to make practical gifts . . . cricket, napkin holder, candle stand, etc. Each packet 25c postpaid. Send for both packets, Stanley Tools, 611[illegible] Elm St., New Britain, Conn.

STANLEY
Reg. U.S. Pat. Off.

THE TOOL BOX OF THE WORLD

SANDEE

Mufflers—All Ford, Chev., Ply. $4.45
All Buick, Pont., Olds., Chrys., Dodge, Hudson, K.F., Pack., etc. $5.45
V-8 and Merc. Duals (32-49 incl.) $15.95

TONE

DEALERS WANTED

DURABILITY

Beautiful SANDEE Fender Skirts $16.95

A SANDEE Sportone will outlast two ordinary mufflers and give More Power! More Speed! More Mileage!—plus a tone quality unsurpassed.

Please ship (item):_____ Price_____
Car and Year_____ Name_____
Address_____

SANDEE MUFFLER CO. 5643 Corryne Pl. Culver City, Calif.

Handy Hank says: "Every man's a handyman with PLASTIC WOOD"

Reset loose drawer pulls—

Replaces splintered wood . . . makes loose screws firm!

Seal drafty cracks—

Fills openings easily . . . dries tight and hard! Resists weather!

Repair loose tiles—

Holds tiles firm on wall! *Easy!*

Also useful in filling cracks in floors, nail and screw holes, repairing broken toys. *Handles like putty . . . hardens into wood!*

PLASTIC WOOD®

A CELLULOSE FIBRE FILLER

IN CANS OR TUBES

WEATHER RESISTANT

BUILD YOUR OWN TILTING ARBOR SAW!

SAVE $50 OR MORE

Exclusive GIL-BILT Build-It-Yourself Features

- No machining—build easily with hand tools only
- No blueprint reading—step-by-step pictorial plans, full scale patterns, actual photographs
- Sturdy wood, aluminum, and steel construction
- Capacity and performance of commercial saws selling for $60 and up

GIL-BILT 10-INCH TILTING ARBOR SAW

- 27x28 in. table, 13½ in. capacity in front of blade
- 10 in. blade cuts 3¼ in. deep, tilts full 45 degrees
- Floor model 34" high table always stays level
- New Departure ball bearing arbor, ¾" precision shaft turned down for ⅝" bore blades, alum. housing, shipped ready to run
- Jackscrew and 4½ in. dia. handwheel lowers and raises blade
- Cast aluminum miter gauge and self-aligning rip fence guide

GIL-BILT Metal Parts Kit includes Plans, ball bearing arbor, miter gauge and bar, rip fence guide, dado insert, lock knobs, jack screw mechanism and handwheel, and all other metal parts (less blade) ---------- **$20.95**
Same Kit with 10" Combination Blade -- **24.90**
Same Kit with 8" Combination Blade -- **23.90**

GIL-BILT 8-INCH TILTING TABLE SAW

- 21x27 in. table tilts full 45 degrees, 13 in. capacity in front of blade
- 8 in. blade cuts from 0 to 2½ in.
- New Departure ball bearing arbor, ⅝" precision shaft turned down for ½" bore blades, alum. housing, ready to run
- Cast aluminum miter gauge and self-align. rip fence guide (same as above)

GIL-BILT Metal Parts Kit includes Plans, Ball Bearing Arbor, Miter Gauge and Bar, Rip Fence Guide, Machined Lock Knobs, Tilt Support Segments, and All Other Metal Parts (less blade) ---------- **$15.95**
Same Kit with 8" Combination Blade ---------- **18.90**

GIL-BILT 12-INCH BAND SAW

- Cuts to center of 24 inch circle
- Handles stock up to 6 inch thick
- 18x18 inch table tilts 45 degrees
- Lower wheel and drive pulley runs on sealed New Departure Ball Bearings; Upper wheel runs on two ⅜" bore Oilite Bronze bearings.
  - Upper and lower blade guides. Each has ball thrush bearing, self-lub bronze jaws.
  - Rubber tired wheels. Choice of cast aluminum or make-your-own wood wheels on metal hubs.
  - Uses standard 78 inch blades up to ¾ inch wide.
- Fully enclosed mechanism for utmost safety.

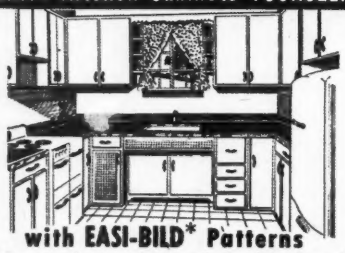
GIL-BILT Metal Parts Kit includes Plans, rubber tires, ¼ inch blade, hubs for wood wheels, ball bearing spindle, tilt mechanism, guides, table tilt segments and all other metal parts ---------- **$16.95**
Same Kit with two machined ready-to-install 12" cast aluminum wheels ---------- **$20.95**

NO DEALERS—ONE LOW FACTORY PRICE! Return in 10 days for full refund if not satisfied. Prices include postage within 600 miles. Over 600 miles add 5%. Send cash, check, or money order for parts kit, or send $1.00 for Step-by-Step Plans and order kit later less cost of Plans. Plans sent postpaid anywhere in the world.

COMPLETE PLANS *only* $1.00 EACH

GILLIOM POWER TOOLS
P.O. Box 1RM, Lambert Field, St. Louis 21, Missouri

SAVE 1/2 ... BUILD
Modern Kitchen Cabinets YOURSELF



with EASI-BILD* Patterns

Now you can have modern, professional looking cabinets with gleaming Stanley Cabinet Hardware in *your* kitchen, bathroom or playroom. It's easy—and inexpensive—when you use the Easi-Bild "Build-It-Yourself" Pattern Method of construction. Simplifies making base and wall cabinets with hand tools. Complete step-by-step directions, patterns, assembly illustrations explain how to build cabinets to exact size needed. Send only $1.00 for Easi-Bild Base and Wall Cabinet Pattern, No. 201.

EASI-BILD PATTERN CO., Dept. MI,
P. O. Box 213, Pleasantville, N. Y.

STANLEY
Reg. U.S. Pat. Off.

*Copr. 1949, Easi-Bild Pattern Co.

SELF WINDING WATCH

Fully automatic, winds itself with each movement of your arm.

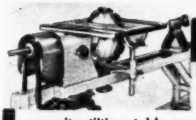
- **Incabloc**
- **An Accurate 17 Jewel Movement**
- **Shock Proof and Anti-Magnetic**
- **Waterproof**
- **Sweep Second Hand**
- **Veri-thin Model**
- **Eliminates over-winding**
- **1 year guarantee**

$27.50 plus 10% Fed. tax

Here for the first time is offered a watch of infinite workmanship and detail that is found in watches selling for $49 or more. Stainless steel back with highly polished chrome case. OUR PRICE is only $27.50 plus 10% Federal Tax.

MARDO SALES CO., Dept. SW-1
480 Lexington Ave., New York 17, N. Y.

RETAIL PRICE $125.00 — 59.95



FACTORY TO YOU!
5 BIG POWER TOOLS in 1

SUPERSHOP is the PRECISION-BUILT power tool WORKSHOP. Big capacity tilting table saw, vertical and horizontal drill press, 30" lathe, sander, grinder. Lifetime-lubricated BALL BEARINGS. Running parts precision-ground. Bearing seats precision-bored. Compare with finest production tools. Buy direct from factory—save $65.00. Write for FREE catalog, full details, trial plan.

SUPERSHOP POWER TOOLS INC.
605 Yates Ave., Beloit, Wis.

$4.95 REAL ENGINE VALUE

A miniature gas engine that really operates. Thousands of Buzz "B" gasoline engines have been sold at twice the price. Now is your chance to buy a real ⅛th H.P. gas engine for only $4.95. Turns up over 8,000 rpm. For boats, planes, midget cars, etc. Guaranteed and ready to run. Includes Champion spark plug and tank. Send only $1.00, engine shipped collect for balance, same day. Write for free catalog or

SEND 10C FOR NEW MAMMOTH ILLUSTRATED CATALOG OF THOUSANDS OF HOBBY ITEMS

America's Hobby Center, Inc., Dept. A119, 156 West 22 St., N. Y. 11

DRAINS CELLARS, WASH TRAYS CIRCULATES OIL

$6.50 Pumps 1800 GPH 300 gal. 30' high, uses 1/8 to 1/3 HP motor. Will not clog.

Postpaid if cash with order.
(Add 50c for west of the Mississippi.)
Thousands in use since 1936

LABAWCO PUMPS, BELLE MEAD 30, N. J.

7 NEW 26" BOAT MODELS

VINYARD 40' — 26" MODEL

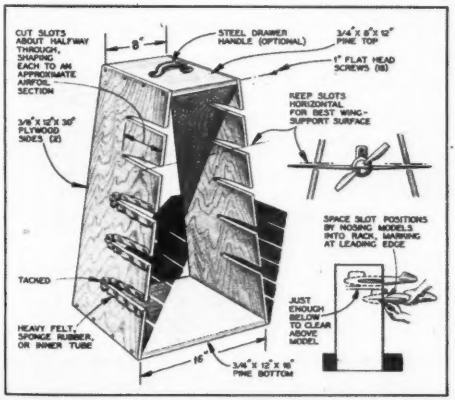
Full size factory copied plans
Complete construction kit ---------- **$5.50** each

Chris-Crafts—Owens—Vinyard—Harbor—Colonial. Models exact scale, built same as actual boats with frame hulls planked. Available are fast electric motors, marine drives for gas engines, special metal fittings. Write for literature. U.S.A. orders only. In all hobby stores everywhere.

DUMAS PRODUCTS—Municipal Airport—Tucson, Arizona.
Worlds largest manufacturer of power boat models

MODEL RACK

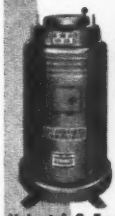
AFTER having several plane models damaged while traveling to and from flying sites, I decided to build this inexpensive, handy gadget. It's designed to fit on the rear seat of a car and to hold five models. When you attend a large meet, its utility will be more than appreciated by the end of the day. The construction is really very simple, the rack consisting of but four parts that are cut to size and assembled with screws. The original one was made of Masonite and reinforced with pine strips. The plywood version shown in the drawing, however, is much simpler and can be put together in short order.—*H. deBolt.*



Small down payment starts you in a highly profitable
WELDING BUSINESS!

Low monthly payments "Pay-out-of-profits" TERMS
You deal directly with factory. No red tape. No third party involved.

FREE particulars on "How to Start and Operate an Arc Welding Business"



Hobart A.C. Transformer Welders are made in 180 to 500 ampere size.

LET HOBART HELP YOU GET STARTED AT ONCE

MAKE BIG MONEY
Cash in now on the terrific demand for arc welding. Opportunity awaits in almost every locality.

EASY TO START
Average mechanical ability and a little practice lets you do good welding quickly. Latest developments in Hobart exclusive features make top quality welding easy.

USE EITHER A.C. OR D.C.
Equip for either shop or field welding. Complete Hobart welder line lets you pick welder to suit needs.

"BUILD-YOUR-OWN" AND SAVE $$$$
Generator only used with your own gas engine saves $$$ and gives you money making portable welder.

HOBART WELDING SCHOOL
Complete or partial courses on every phase of welding taught by experienced instructors. Low cost. G. I. approved.

HOBART Brothers Company
Box SM-119, Troy, Ohio

HOBART

"one of the world's largest builders of arc welders"

HOBART BROTHERS CO., BOX SM-119, TROY, OHIO

Please send information on how I can make big money with welding, pay for equipment out of profits. Also information on items checked:

☐ Hobart A. C. Welders ☐ "Build-Your-Own" Welders
☐ Hobart D. C. Welders ☐ Hobart Welding School

NAME _____

ADDRESS _____

GIVE YOURSELF THIS AMAZING, SAFE ELECTRIC JIG SAW!

Buy a SYNCRO electric jig saw—so safe even small children may use—yet so versatile, powerful, every adult craftsman needs one. THOUSANDS IN USE.

Listed by Underwriters Laboratories, Inc.

Portable. Arm adjusts to ANY length material. Handy Off-On switch. Ideal for fun or profit, making house numbers, signs, etc. No belts, gears nor oiling. Made and GUARANTEED by the largest company of its kind. At your dealer. If dealer hasn't it, send $17.50 direct to factory, we'll ship prepaid.

DEALERS! Write for SYNCRO'S "BIG 3" Profit Facts!
SYNCRO CORP., DEPT. SR-119, ROCHESTER, MICHIGAN, U.S.A.

SYNCRO

SAFE ELECTRIC JIG SAW

BUILD AN EXTRA ATTIC ROOM

IT'S easy to build an extra bedroom, workroom or playroom in your attic. You can do it quickly, at low cost with GOLD BOND Gypsum Wallboard. The handy panels are fireproof, moisture resistant, and easy to nail in place. Decorate with GOLD BOND Sunflex, the low-cost wall paint that dries in 1 hour. Get both at your local GOLD BOND Lumber and Building Material Dealer today.

SEND FOR FREE BOOKLET TODAY!

NATIONAL GYPSUM CO.
Dept. D-8, Buffalo 2, New York

Gentlemen: Send free copy of new Booklet, "Modernizing Magic" showing remodeling ideas and methods:

Name .....

Street .....

City ..... *State* .....

(Please print name and address)

Folding Handle **SAF-T-SHEATH** WOODSMAN FISHERMAN *Knife*

1. 2.
1. Fisherman
2. Woodsman

The handle folds around the blade to form the perfect sheath. It protects the blade, protects you.

- Keen, superhardened, tool steel blade, 8½" open, 4¾" closed; weighs 5¾ oz.
- The chrome-plated and plastic handle, shaped to fit the palm, is sturdy and comfortable to use.
- No belt sheath necessary! Carry in pocket or tackle box.

$2.95 EITHER MODEL

If your dealer can't supply, send check or money order

WALTCO PRODUCTS
Dept. ME911, 2300 West 49th St., Chicago 9, Ill.

SIXTH EDITION AUTOMOBILE RACING

Full description with over 100 illustrations of new fast racing creations. Working drawings with step by step building instructions for successful Ford 60 Midget—Model A Roadster—Offenhauser Dirt Track Racer—Miller 158.5 m.p.h. Racer. Details on axles, frames, engines, bodies, etc., etc. Entrance Blank with rules and regulations. A Book Full of interest for every Auto Racing Fan, Driver, Mechanic and Owner. Money back if not satisfied.

ORDER NOW! $2.00 POSTPAID; $2.40 C.O.D.

RAY F. KUNS DEPT. 61 CINCINNATI 27, OHIO

NOW! FILE YOUR OWN SAWS

Do expert saw filing at home. Precision filing easy without experience. Two simple adjustments. Keeps any hand saw extra sharp and true-cutting. Complete with file. Money back guarantee. Cash with order, prepaid. (COD postage extra.) Order today. $2.95.

THE SPEED CORP., Dept. MI
512 N.E. 73 Portland 16, Oregon

Powerful
Amazingly Accurate
INDOOR OR OUT, THE BIG, NEW
Boone AIR TARGET PISTOL
INCLUDING 150 RDS. BBs

Rustless steel and aluminum 9¾" long. $3.95 postpaid (or $1, with $2.95 and postage C.O.D.)

PRECISION SPORTS PRODUCTS
Parma 5, Michigan

$3.95 POSTPAID

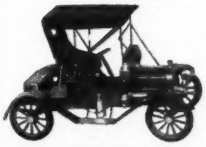
The Ideal Gift for the Hobbyist and Collector!

1903 Rambler
6½" long. $2.50

1904 Oldsmobile
6" long. $1.95

HUDSON MINIATURES' "Old Timer" AUTO KITS

Featuring the latest addition to our line —the 1903 RAMBLER, forerunner of the Nash



1911 Maxwell
7½" long. $2.50

The authentic detail and colorful appearance of Hudson Miniatures' "Old Timer" autos enhance dens, offices, club and game rooms. These ¾" scale models make up one of the finest selections ever offered to collectors, hobbyists, museums, schools and decorators. Kits come with full instructions and plan. Easy to assemble . . . no carving or tedious fitting of small parts. Prefabricated kits contain cast plastic wheels, cast headlamps, cowl lamps, radiators, horns, bulbs, steering wheels and radiator caps. Other parts are die-cut or cut to length. Sorry, no C.O.D's. Add 25c for postage and handling.

1903 Model "A" Ford
6½" long. $2.50

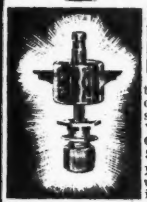
1909 Stanley Steamer
8" long. $2.95

1910 Model "T" Ford
8" long. $2.50

1909 Model "T" Ford
8" long. $2.95

SCRANTON HOBBY CENTER, Dept. 2, 315 Adams Ave., Scranton 10, Pa.

MAKE ANY CUT WITH THESE NEW WOODSHAPERS for YOUR CIRCLE SAW or DRILL PRESS!



MODEL #60—Originally designed for heavy industrial use, now priced for home workshop. Can be attached directly in chuck of your drill press. Exclusive pilot bearing (see illustration) eliminates side thrust, chatter and vibration—assures smooth cutting action. Blades can't come out—set screws hold them securely. Complete, with YOUR CHOICE OF ANY 6 PAIR DOUBLE-GROUND BLADES SHOWN BELOW, only **$12.95.**

MODEL #50—Same as Model #60 but without exclusive pilot bearing. Designed for intermittent shaping; over 100 different shapes can be cut. Complete, with ANY 6 BLADES OF YOUR CHOICE SHOWN BELOW, only **$8.95.**

All Aladdin tools are **guaranteed.** Postage prepaid with all cash orders. C. O. D. plus postage. GET YOUR ORDER IN TODAY.

For Your Circle Saw

MODEL SA-10—Heavy-duty, industrial-type shaper of solid steel, now priced in home workshop range. Absolutely safe—blades locked in position with screws all the way through. In ordering, state diameter of shaft. Complete WITH ANY 6 PAIR OF READY-GROUND BLADES SHOWN BELOW, only **$14.95.**

ALADDIN WOODSHAPING BLADES

Specify by number the blades you want. Additional blades **$1.50** each, **$3.00** per set.

ALADDIN TOOLS, INC.
3121 Main Street Kansas City, Missouri
Dealers Write Today

WRITE FOR YOUR FREE COPY OF THE NEW KRW HYDRAULIC PRESS BOOK

Describes all manner of Production and Shop Work on KRW Hydraulic and Bench Type Presses. Illustrates the new KRW Hand-operated, Electric-operated and Air-operated Hydraulic Presses. 25 to 100-ton capacities.

Write for your copy today.

K. R. WILSON, DEPT. 53, 215 MAIN ST., BUFFALO 3, N. Y.

When Your Radiator Springs a Leak...

Keep Smooth-On No. 1 Iron Cement handy for emergency auto repairs. Use it to stop radiator leaks; seal cracks in water jackets, crank or gear cases; tighten loose door hinges, handles, etc. You can save time and money making these repairs yourself. And they'll *stay tight*, for Smooth-On expands a little as it hardens. Buy Smooth-On in 1¾-oz., 7-oz. or 1-lb. size at your hardware store. If they haven't Smooth-On, write us.

FREE Repair Handbook

This famous 40-page book shows, as well as the above repairs, many other useful ones you can make around the house. 170 pictures. Send postcard for YOUR free copy today.

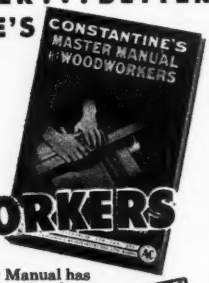
SMOOTH-ON MFG. CO., Dept. 69
570 Communipaw Ave., Jersey City 4, N. J.

Do it with

SMOOTH-ON

THE IRON CEMENT OF 1000 USES

NEW...BIGGER...BETTER CONSTANTINE'S MASTER MANUAL *for* WOODWORKERS



For years Constantine's Master Manual has been a "must" with old time woodworkers and craftsmen . . . and beginners marvel at its wealth of helpful articles. This new issue is even more sensational than any of our previous manuals. New departments have been added, including a complete Power Tool section, a complete upholstery section, Frame mouldings, rare and domestic woods and lumber. Large color section showing full color identification panel of 60 different woods, 83 inlay designs, 44 inlay panels, all in natural color. All at rock-bottom prices. Send for your copy today.

ALBERT CONSTANTINE & SON, INC., 794-A E. 135th St., N. Y. 54

SEND THIS COUPON NOW

Albert Constantine & Son, Inc.
794-A East 135th St., New York 54, N. Y.
Enclosed find 25c for a copy of your "Master Manual" and a FREE One year's subscription to Chips & Chats.

NAME.....
ADDRESS.....
CITY.....STATE.....

FREE

With each copy of our Master Manual, you get a year's subscription to Chips & Chats, a breezy bimonthly to keep you up-to-date on what craftsmen throughout the country are doing.

SPEED & MILEAGE MANUAL

EASILY GET UP TO 40% MORE SPEED, POWER AND MILEAGE FROM ANY AUTOMOBILE!

Famous New Book shows simplified Soup-up Methods—Speed Tuning—Economy Secrets—"Customizing Plans"—Latest Track Proven Methods for all cars! Tells how to build your own **SPEED EQUIPMENT! FAST SPORTS CARS! "HOT RODS"! 155 M.P.H. CONVERSIONS!** Complete Instructions on building inexpensive California Accessories, Superchargers, Hi-Speed Heads, Dual Manifolds, Twin Mufflers, "Water Injectors"! All about Fast Engines, Gas Saving, Restyling, "Cam Secrets," Multiple Carburetion, Ratios, Fuels! **BRAND NEW METHODS,** Formulas, Plans, "Racing Tricks"—"*STOCK CAR SPEED SECRETS*"! Also shows latest **"HOLLYWOOD CUSTOM STYLING"!** Streamlining! Sport Changes! Lowering! Speed Conversions! PLUS California Roadster Plans!, Racer Diagrams!, Working Drawings! Performance Charts! Graphs! Beautiful Photographs! Etc.! **COMPLETE MANUAL** plus "HOT ROD Handbook" and Equipment Catalog—

ALL THREE $1.98 Postpaid

ALMQUIST AUTOMOTIVE ENGINEERING, Milford 40, Pa.

FREE! SOUTH BEND CATALOGS

Cat. 100—9" to 16" SWING LATHES
Cat. 400—14" DRILL PRESSES
Cat. 500—7" BENCH SHAPER
Cat. 77—ATTACHMENTS
Write today—state catalog wanted

SOUTH BEND LATHE WORKS
453H E. Madison St., South Bend 22, Ind.

Build your own JET ENGINE!

Order these plans today

1. JET PROPELLED BICYCLE. Assemble your own. Photo and instructions $1.00.
2. HOW TO MAKE EXPERIMENTAL JET ENGINES. Seven sheets drawings with information and instructions $2.95.
3. BOTH OF ABOVE in one order $3.75.

SEND NO MONEY. Order both at once $3.75 C.O.D. in USA plus c.o.d. postage. Send check or Money Order and we pay postage. Get other information too. Rush Order.

J. HOUSTON MAUPIN, Dept. 88, Tipp City, Ohio

AUTHENTIC GUN MODEL KITS

Luger	$3.00
.45 Colt Automatic	$3.50
Walther P.38	$3.00
Colt .44 Frontier	$3.50
Flintlock Pistol	$4.00
Sub-Machine Gun	$5.95

Easy to finish. Metallic appearance. Order these models direct.

For Catalogue Send 10c in Coin To:

O'BRIEN GUNCRAFT P.O. Box 657 Madison, Wis.

Only $498

OTTAWA Mule Team Tractor

Finest of all low cost tractors. Costs too little to do without. Has the toughness and strength of a team of mules. Over 4,000 in use. With ease and low operating cost, it plows, discs, harrows, mows, plants, cultivates, etc. Weighs nearly 1,000 lbs. and has Bull-Dog traction. Sold only direct to user. Write quick for FREE details.

OTTAWA MFG. CO., 2-987 Garden St., Ottawa, Kansas

3-Pc PAINT STRIPE SET Only $1.00

3 Separate Tools—Each Makes Different Width

Stripe perfect lines—straight, curved, with any paint, lacquer, enamel, easy as drawing lines with ruler! Beautify furniture, toys, autos; make signs and imitation tile. Simple instructions included.

SEND NO MONEY. Mail order. Pay postman only $1.00 plus postage. If not delighted return in 5 days for money back. Order Now.

STRADER MFG. CO., 259 Strader Ave., Dept. E-353, Cincinnati 26, Ohio

KING MIDGET
HOME ASSEMBLED MIDGET AUTO

WORLD'S LOWEST PRICED AUTOMOBILE!

80-90 MI. PER GAL.—45-50 MI. PER HR.

Drive this car for as low as 50c per week. Precision built parts direct from factory with beautiful all steel body. Get all the facts on this amazing small auto—send 25c for detailed circular with large picture. 4 view drawings and price of all parts, or send $1 (refunded first order) for this plus actual assembly book with 42 photos, drawings: blueprints of snow and ice conversions, etc.

King Midget is the ideal small car for errands, sports use, to and from work, short business or pleasure trips, delivery service or second-car utility for the whole family. Comfortable—room for husky six footer

MIDGET MOTORS MFG. CO., ATHENS, 3, OHIO

SEND FOR FULL INFORMATION TODAY!

MAKE and REPAIR Your Own Band Saw Blades *with*

The ERWOOD *Electro* Band Saw Brazer...

No more slowdowns . . . it takes less than TWO MINUTES to repair a blade with the Erwood Band Saw Brazer. And you save money too . . . do inside contour sawing easier and faster. No wasting broken blades . . . make your own band saws from coil stock. 110 or 220 volt. Complete with kit.

$19.75

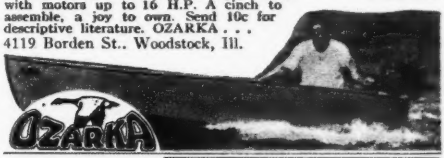
THE *Erwood* COMPANY

218 WOODSTOCK ST., CRYSTAL LAKE, ILLINOIS

TODAY'S BIGGEST PREFAB BOAT BUY

Build a better boat than you can buy! Save up to 55%. See OZARKA's Model 12-A—a trim, top-quality 12-footer with laminated rib construction, all oak frame, for years of boating pleasure with motors up to 16 H.P. A cinch to assemble, a joy to own. Send 10c for descriptive literature. OZARKA . . . 4119 Borden St., Woodstock, Ill.

$73.50 COMPLETE



Victoria Calash Top $2.50

COLLECTORS MINIATURES

"OLD-TIMERS"

NEW! PRE-FAB KITS

Exquisitely detailed, decorative. Easy-to-assemble. Ready-shaped parts. Simple plans-instructions. Everyone who thrills at a wailing siren will love these 1/24" scale "masheens." Steamer $6.50; Comb. Hose-wagon $3.50; City Service-Ladder No. 4; Serv. Hose Reel $2; Comb. Chem.-Wagon $3.50; Hose Wagon $2.50; Horse Vehicles Surrey-with-Fringe $2; Victoria $2.50; Enclosed Brougham $2; Horseless Carriage $1.75

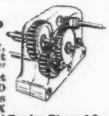
Comb. Hose Wagon $3.50

TINY ELECTRIC MOTOR $1.50

Compact, powerful, reversible. Plastic housing. 1½-4½v. Perm. Mag. 1"x1⅜"x-1½" hi. 2 ozs. Shaft 3/32"x2"

MULTISPEED GEAR BOX $2

Plastic Housing, ½ oz. 4 different speed-shafts. 1" wide. Pulley-set 25c Catalogs: 120 pg. Ship Models 39c; HO-TRIX Trains 15c; Model Books-Plans 10c



SMALL JET ENGINE $1.95

Nothing to wear. Instant starting. No props. Easy-to-install—use. Flies 12" to 20" planes. Jetex—perfect for boats—cars. Compl. with fuel, accessories, instructions! (10 Extra fuel 65c) Larger Jet Engine $4.95.

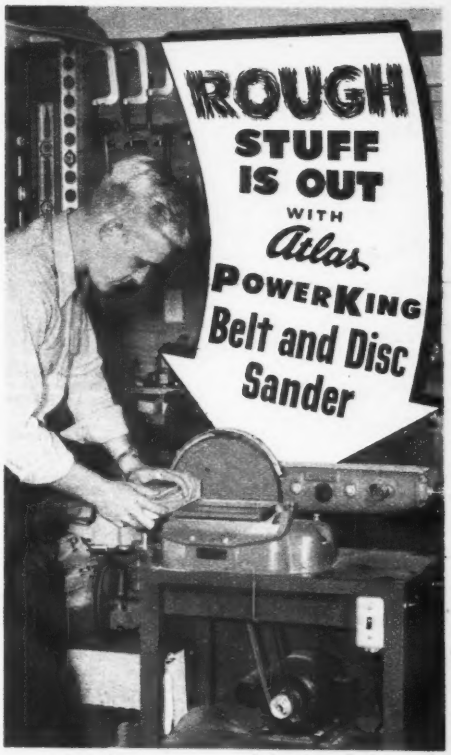
HOBBYISTS HAVEN—VISIT POLKS!

POLK'S HOBBIES

Dept. M.I.-119

314 5th Ave. N. Y. 1

Dealers Write. Open Thurs. eve.



Sands any width boards, angles, curves—metals, plastics

Now you can give every project a true "professional" sanded finish in a matter of seconds—save yourself hours of tiresome hand sanding—with this Power King Belt and Disc Sander. It is completely adjustable—table tilts 45° both ways, belt can be used in vertical or horizontal position, guards are removable for sanding big boards.

The Power King gives you a 10" diameter sanding disc, 4" wide belt. It is ruggedly built, with precision ball bearings, to last a lifetime. At dealers or *SEND POSTCARD FOR NEW FREE CATALOG.*

Atlas Press Co.

1130 N. Pitcher St., Kalamazoo, Mich.

MATCHED PRECISION TOOLS FOR WOODWORKING AND METALWORKING

NEW, BETTER SANDER-POLISHER

Ready!

Works off any 60 Cycle, 110-120 Volt AC outlet

ONLY **$14.50**

IT POLISHES

Now—a new, exciting Electric Sander-Polisher by SYNCRO—the name you respect! Portable. Lightweight. Fine for massaging! 14,400 exclusive "POWER" Motions per minute—just guide it! No belts, gears, wheels. For light sanding, finishing, refinishing, etc. Polishes furniture, cars, shoes, better, faster! With 9 sheets Aluminum Oxide sandpaper, felt and virgin lambswool pads, 8 ft. cord, plug—only $14.50. If dealer hasn't it yet, send $14.50 to factory, we'll ship PREPAID. Hurry!

SANDS IT!

Write for SYNCRO'S "Big 3" Profit Facts!

DEALERS!

SYNCRO

QUALITY ELECTRIC PRODUCTS

SYNCRO CORP., Dept. PR-119, Rochester, Mich., U. S. A.

FREE . . . POWER TOOL & WELDING CATALOG

Beautiful rotogravure 52-page catalog showing complete line of Powr-Kraft Power Tools and Welding Equipment at money-saving prices. Book contains hundreds of illustrations, descriptions and prices of nationally-known tools. All may be purchased on convenient monthly payments at Wards Mail Order Houses, Catalog order offices or Retail stores. Every power tool beginner, advanced hobbyist and production shop should have a copy of this catalog.

Mail coupon for your free copy now!

Montgomery Ward

Chicago • Albany • Baltimore • Denver • Ft. Worth
Kansas City • Oakland • Portland, Ore. • St. Paul

Mail Coupon to Your Nearest Ward House—NOW.

MONTGOMERY WARD, Dept. 84MI-11
Please send me Power Tool and Welding Catalog.

Name_____
(Print Plainly)
Street Address, Route, Box_____

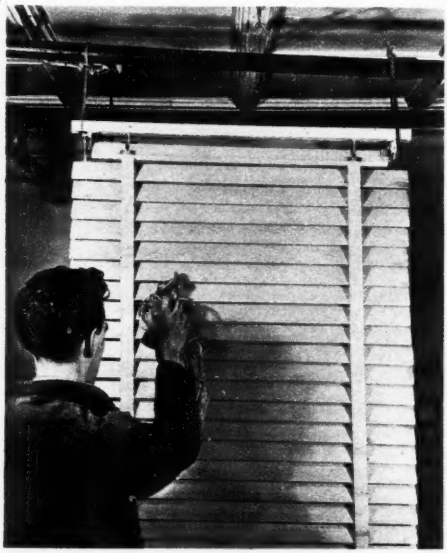
Post Office_____ State_____

Phone No._____

how to clean

VENETIAN blinds must be taken apart periodically for a thorough cleaning. To do the job in a professional manner, you'll need a screwdriver, a small hammer, powdered laundry soap, a large sponge, two 18-in. pieces of rope, and plenty of clean cloths. The proper sequence to follow is clearly illustrated in the accompanying photos. After washing the slats, you can clean them further and give them a glossy, easily dusted finish by applying oil or wax furniture polish to them.

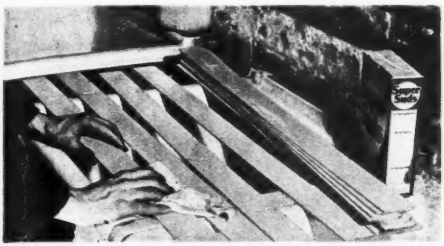
—*Robert Scharff.*



First, suspend frame from ceiling-hung rope loops and wipe with cloth to remove all the loose dirt.

Pull out the tacks holding the tape to the bottom frame, uncovering the holes through which the lift cords run, untie the knots, and pull cords free.

VENETIAN BLINDS



Slip out each slat, lay it flat, and rub it clean with a sponge or cloth dipped in warm soapy water.

After washing with soap, rinse each slat thoroughly in cold water, stand it on end, and allow to dry.

Take tapes off frames, agitate in jar filled with dry-cleaning fluid, dry, and tack back in place.

Work slats back into position, thread cords straight down between the vertical tapes, knot them under bottom slat, and check the operation of the blind.

Lafayette RADIO ELECTRO NEWS

★ 29th YEAR SERVING AND SAVING YOU MONEY

NEW YORK: 100 Sixth Avenue and 542 E. Fordham Road
CHICAGO: 901 W. Jackson Blvd. **BOSTON:** 110 Federal St.
NEWARK: 24 Central Avenue **ATLANTA:** 265 Peachtree St.

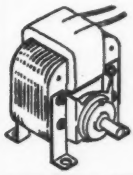
SIZZLING VALUES
from New Lafayette Catalog
(return Coupon for yours NOW)

FAMOUS-MAKE ELECTRIC HAND DRILL

Save $3 on this well-known electric hand drill. Ideal "general purpose" tool for home and shop use. Takes bits up to 1/4". Self-tightening chuck. Precision 1400 rpm motor. On-off toggle switch. Pistol-grip handle. Strong die-cast zinc housing with aluminum finish. 110 volts, 60 cycles, A. C.

List Price: $11.95
LAFAYETTE'S PRICE: $8.95

☐ No. 17N15796P (weight: 4 lbs.)



1/20 HP MOTOR "BUY"

LAFAYETTE'S PRICE: Only..... $3.89

You'll find many uses for this little giant 1/20 hp motor. 2900 rpm. 110 volts, AC, 50 or 60 cycles, 3½ x 2¾ x 3½ high. Shaft is ¼ dia., ¾ long.

☐ No. 99N7079P (wgt.: 5 lbs.) $3.89

FREE

GET THIS BIG NEW 1950 EDITION

- Bumper Crop of Values in Lafayette's **BARGAIN CATALOG** Of Everything New in Radio-Electronics!

JUST OUT

Save up to 40% on everything you buy from this new 1950 Lafayette Radio Catalog, hot off press! Special Bargain Section included in 164 pages sizzling with newest famous-make electronic equipment! TV sets, chassis, viewing tubes, antennas, high fidelity, equipment, ham gear, 3-speed record changers, tools, parts, appliances, etc. For FREE bargain-hunter's handbook, mail coupon now!

LAFAYETTE RADIO, Dept. TK-9
901 W. Jackson Blvd., Chicago 7
100 Sixth Avenue, New York 13

MAIL COUPON NOW

☐ Check here for FREE Catalog. (Please don't check if you have already gotten yours.)

☐ Please fill my order for items checked above for which I enclose $..... in postal note, money order or check. I'm including shipping charges based on weight and zone.

NAME.....

ADDRESS.....

CITY ZONE STATE

FASTER HOTTER HANDIER

New VARI-HOT

Electric Soldering Iron

ONLY $6.95 COMPLETE DELIVERED

HOT IN 30 SECONDS

Indoors Summer — Outdoors Winter

Hottest news in years! Dual heat within the tip reaches normal soldering temperature in 30 seconds, and stays hot. Booster-button switch makes tip 100% hotter—holds—controls—varies heat as desired with 75% less current.

Unique wire-wound heating element—no carbon to wear out.

Needs no transformer. Practically indestructible pistol-grip handle stays cool, never tires hand. Long-wearing, tough copper soldering tip; attached safety collar; 6-ft. rubber cord.

Northwest Airlines, Inc., famous New York-Orient pioneers, a satisfied user, in radio and maintenance shops.

28-32 Volt and 110-115 Volt models AC-DC. 25-100 watts.

DEALERS WANTED

Send check or M.O. today to

Guarantee Certificate with every iron

DICKSON ENGINEERING & SALES CO.
4701 Townes Road, Minneapolis 10, Minnesota

for AUTOS...TRUCKS...TRACTORS

Fits all straight engines with "freeze plugs" 1" to 2½" dia. (Except Ford 6, small Jeeps and V-type engines).

GUARANTEED only $13.95

Shipped parcel post prepaid if remittance is enclosed; otherwise COD with postage added.

DON'T "CURSE" WINTER STARTING!

INSTALL A

SHUR-HETE No. 5 MOTOR WATER HEATER

Get easy starts and actually save money this winter. How? By installing a Shur-Hete No. 5—it will keep your engine warm all night long by heating the liquid in the water jacket.

Operates on regular 110V, AC or DC electric current...consumes only 300 watts per hour.

Save Time and Money with Shur-Hete No. 5

Eliminate run-down batteries... towing charges... needless engine wear... and wasted gas.

Uses about 5 cents worth of electric power for overnight protection.

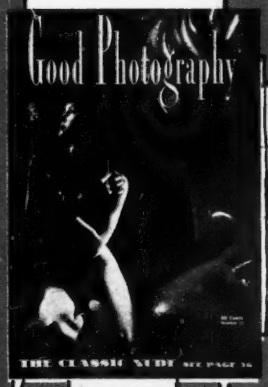
Safe to use with any standard anti-freeze.

Will not overheat engine or burn out.

Dealerships Open!

JOHANSON MOTOR HEATER CO. 818½ W. Webster St. Chicago 14, Illinois

THE BOOK YOU HAVE BEEN WAITING FOR



An all new edition, the eleventh, of this long sought-for book is now on sale. Here is a partial list of the contents:

getting "atmosphere" in your pictures
cats and dogs
trees—make the picture
telltale picture signs
silhouettes
the bridge and the photographer
the classic nude
one model many moods
indoor pictures with outdoor light
photography after sundown
plus a 55-page salon section

A PAWCETT PUBLICATION

November, 1949

NOW a DYNAMIC HEAVY DUTY INDUSTRIAL WELDER

FOR AUTO—HOME APPLIANCE & FARM IMPLEMENT REPAIRS! ONLY $28.50 COMPLETE

WORKS ON IRON, STEEL & other metals . . . does work you'd expect from a larger, costlier machine; portable, easily carried; OPERATES FROM ANY properly wired 110 VOLT LINE. Also available for 220 volt operation at slight additional cost; has 8 metalic & carbon are welding heat stages. EASY TO OPERATE TRANSFORMER TYPE WELDER—If inexperienced you can learn to do professional work by following the SIMPLIFIED WELDING & OPERATING INSTRUCTIONS FURNISHED—comes complete ready to operate with helmet, rods, cable, instructions. SAVE TIME AND MONEY—Do your own welding—Just a few repair jobs will pay for this machine. A practical and profitable machine tool for any workshop. Make money doing repair work for others. Costs a few cents to operate.

SPECIAL GIFT OFFER! WORTH $6.80 ARC TORCH YOURS at NO EXTRA COST!

Write today for FREE DETAILS, ARC TORCH GIFT OFFER and DYNAMIC WELDER 10-Day Trial Offer.

DYNAMIC WELDER CO., Dept. BTD-119
18 EAST 23rd STREET, CHICAGO 16, ILLINOIS

A MAN'S BEST FRIEND IS HIS POCKET KNIFE

Blades hand honed, hand stropped. Many styles, at your dealer's. $1.50 up.

CAMILLUS *has the edge!*

No. 22 2 13/16" closed

CAMILLUS CUTLERY COMPANY, N. Y. 17, N. Y.

Money Back Guar.

7x50 PRISM BINOCULARS

PRECISION OPTICS—BRAND NEW

$36*

6x30 Achromatic Field Glasses **$16***

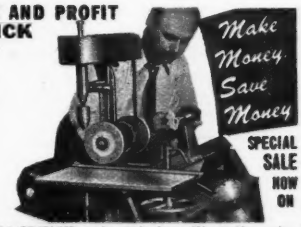
* 20% Federal Tax

Send for Free Catalog of Binoculars, Telescopes & Microscopes

7x50 $36 Illustrated

BROWNSCOPE CO.
Dept. 11L, 24 W. 45th St.
New York 19, N. Y.

FOR PLEASURE AND PROFIT GIVE AN EMRICK



5 POWER TOOLS IN ONE MACHINE *only* $39.95

SPECIAL SALE NOW ON

EMRICK 5-in-1 MACHINE—*the gift he will really enjoy!* Easy to learn 83 operations, working in wood, metals or plastics.

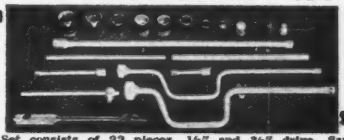
An EMRICK includes big capacity, heavy-duty Lathe, Drill Press, Saw Arbor, Grinder, Sander—all in ONE power machine, using ONE motor. Only $39.95 cash, or on Easy Payments. Christmas delivery assured. 10-Day Free Trial. MONEY-BACK GUARANTEE. Thousands of satisfied customers—our 51st year.

Write for FREE Catalog, describing Big Pre-Christmas Sale. EMRICK, INC., 1874 Clinton, Kalamazoo, Mich.

---

23 PIECE SOCKET SET

$20 VALUE



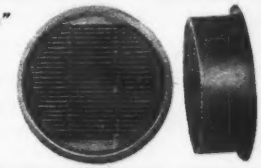
PRICE $9.50

Set consists of 23 pieces. 1/2" and 3/8" drive. Same quality as above set. Shipping weight 10 pounds. This is what you get.

1—1/4" Socket	1—13/16" Socket	1—2" Extension
1—5/16" Socket	1—7/8" Socket	1—4" Extension
1—3/8" Socket	1—15/16" Socket	1—18" Extension
1—1/2" Socket	1—1" Socket	1—T-Handle
1—9/16" Socket	1—1 1/16" Socket	1—1/2" Flex Handle
1—5/8" Socket	1—1 1/8" Socket	1—3/8" Speed Handle
1—11/16" Socket	2—Bar Handles	1—1/2" Speed Handle
1—3/4" Socket		

DARKROOM VENTILATORS

13 1/2" DIAMETER



4 1/2" THICK STEEL

VENTILATE YOUR DARKROOM

$25.00 Value—PRICE $7.50 set or $4.00 Each

New government surplus. Air flows through these steel louvers freely due to the arrangement of baffle plates. Light does not show through these ventilators. Hundreds of these vents have been installed in darkrooms. You will need two for your darkroom. Install one in or near the ceiling and one near the floor. $7.50 for set of two or $4.00 each. Shipping weight 29 lbs. for set of two.

NEW SHERRILL COMPASS

$25.00 VALUE PRICE $5.95 Postage Paid

ARMY TANK COMPASS

These compasses were built to rigid government specifications for modern army tanks, and are known for their high degree of efficiency and ruggedness. It is a very useful instrument for universal installations, such as boats, planes, cars, trucks tractors, etc.

These compasses are new in original cases with compensators for horizontal corrections, magnetism correctors, calculator, adjustable mounting brackets, and instruction book. Compass size 5" high by 3 1/2" dia., weight 1 lb. 6 oz. This is truly a fine compass and a real vlue for only $5.95.

FREE! CATALOG SHOWING MANY MORE SURPLUS BARGAINS, WRITE FOR IT NOW

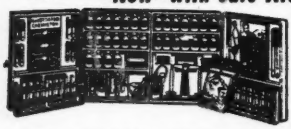
ARMY SURPLUS SALES OF FRESNO
1620 Tulare Street Dept. 211 Fresno, Calif.

Send today for new, FREE Chemcraft Chemistry book—"The Wonders of Chemistry". Shows how to amaze friends and family with chemical magic. Describes many fascinating home experiments like making perfume, windshield cleaner, soap, etc. Loads of fun, thrills, excitement and adventure await boys who start now to obtain knowledge of Chemistry. Act now! Send for FREE Chemcraft Chemistry book—TODAY!

REG. U. S. PAT. OFF.

CHEMCRAFT

Now--with safe Atomic Energy



Sold in the best stores all over the country. Address below for your FREE copy of "THE WONDERS OF CHEMISTRY."

THE PORTER CHEMICAL COMPANY
64 Prospect Avenue • Hagerstown, Md.

SPEED AND POWER HANDBOOK

Build fast Stock Cars! California Roadsters! 150 MPH Rods! Covers Fords to Cadillacs—all makes! Breathtaking methods—Authentic—Direct from California!

SAVE MANY DOLLARS

Build your own Dual Manifolds! Superchargers! Hot Cams! Water Injectors! Hi-Compression Heads! Mileage Devices! Get racing speed, lightning acceleration, dynamic power increases from any make passenger automobile! Get construction drawings! Tuning techniques! Speed tricks! Picture catalogues! Economy secrets! Ingenious formulas! Including—"Racing Frames"—"Reciprocating Masses"—"Jet Engines"—"Braking Characteristics"—"Dynamometers". Dual Pipes, Gears, Fuels, Manifolds, Porting, Relieving, Lowering, Balancing!

Includes "CALIFORNIA AUTOMOBILE CUSTOMIZING"—Glossy photographs! Diagrams! Newest ideas! Conversions! Re-Styling all makes! Streamlining! Chopping! Channeling! Customizing!

50 CHAPTER LIBRARY EDITION—complete—$1.98 Postpaid.

NEWHOUSE AUTOMOTIVE INDUSTRIES, 5805-C4 EAST BEVERLY, LOS ANGELES 22, CALIF.

Winner
GADGET-OF-THE-MONTH
MECHANIX ILLUSTRATED
OCTOBER 1949

over 600,000 sold already!

Quick Wedge
SCREW-HOLDING
SCREWDRIVER
unconditionally guaranteed

DON'T DROP THAT SCREW!
SEND $1.00 FOR 8½ INCH SIZE
KEDMAN CO. DEPT. M. 233 SO. 5th WEST, SALT LAKE CITY, UTAH

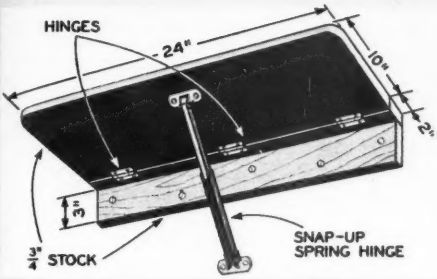
Butterfly

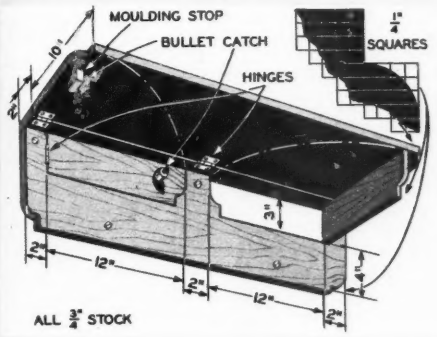
If your kitchen has limited table and shelf space, ease Mother's work by making her a folding shelf.

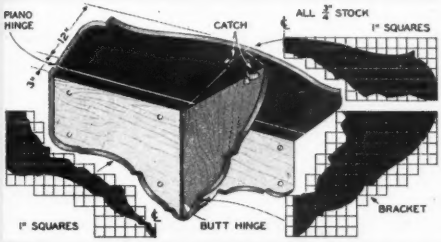
EVERY kitchen, no matter how small, has space where a folding table-shelf could be hung. Folded, it'll project no more than two or three inches. A jigsaw is all you'll need to make any one of the shelves shown here. Since it must bear quite a bit of weight, make sure that the shelf you select is properly secured to the wall. The best arrangement is to lag-screw it through the wall into the studs. If that's impractical, it can be attached to a plaster wall with expansion bolts or to a plywood wall with bolts and nuts. Older kitchens sometimes have sheet-metal walls—Parker screws should be used here.

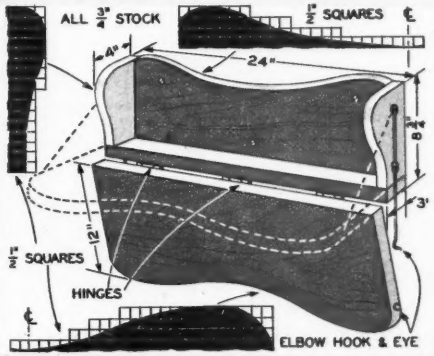
All necessary details are shown in the drawings. Use ¾-in. stock—common shelving pine is good—and alter the over-all dimensions to suit the space the shelf will occupy. The easiest way to finish a shelf is to paint it to match existing woodwork in the room. Or you might stain or paint it to match your breakfast table and chairs. If you want to get really fancy, you can cover it with leatherette or linoleum. Any one of these treatments will take a great deal of abuse without showing too many battle scars.—*Simon S. Palestrant.*

Pantry Tables









SAVE UP TO 85% IN WAR SURPLUS

CLAMP-ON LAMP
WITH ADJUSTABLE BALL AND SOCKET SWIVEL HEAD, LONG RUBBER COVERED CORD AND WALL PLUG. The All Purpose Lamp. Wonderful indoor Photography, Floodlights, Baby Spot or Large Spot, Personal Bed Reading, Workbench, Garage, etc. Lamp Alone. . . 99c
Highly Polished 9" diameter Parabolic Reflector or 5" diameter Spot Reflector at ONLY . . . . . ea. 85c

B-15 Style JACKET
Genuine B-15 Type Jacket. Sturdy, water repellent O.D. Oxford Cloth. Body & sleeves fully lined with 100% Alpaca Wool. Mouton Fur Collar. Zipper front and rib-knit cuffs & bottom. 2 outside & 2 inside pockets. Sleeve pencil pocket. Air Corps insignia. Size 36 to 46 in O.D. color only 14.95
Same as above, but with sheepskin lining choice of Green or Brown. 16.95

GADGET MIX Especially prepared for the HOBBYIST. Rivets, Spacers, Bolts, Screws, Gears, etc. A Gold Mine, #106. 5 lbs. ONLY $1.19

BEARING MIX #170A
A PALLEY SPECIAL!! Approx. 20 Needle, Ball & Roller Bearings, New & Used - Sizes ½" to 4". Some of these cost Gov't $10 apiece. Never such a value! 5 lbs. . . ONLY $1.59

HINGE MIX #170H
12 pairs of strap & butt hinges. Sizes 1" x 1" to 1¾" x 4" in length to 8" strap.
A $3.00 VALUE for ONLY. $1.09

ABRASIVE & GRINDING WHEEL MIX
50 Pieces including honing stone, pencil rolls, wheels, abrasive sheets, etc.
A Sharp Value. 170AG 99c

SPRING MIX #206
Torsion, Compression & Tension Springs, asstd. sizes. A treasure trove for emergencies.
2 lbs. for ONLY. . . 89c

FILE MIX
Ten Assorted Files of 6", 8", 10", 12", includes 3 Vixens, half rounds, bastards, mills, etc. in seconds and used but in good condition. 1 Vixen alone worth our price for entire mix. #F-1 . . . . . 99c

PULLEY MIX You'll want this one around. 10 micarta and metal pulleys ranging from 1" to 5" with ball and one piece bearings. These are aircraft pulleys, the best made, with 100's of uses.
A WONDERFUL BUY $2.95

COUNTERSINK MIX Countersink Assortment. Excellent condition. High speed steel. Assortment of ten 100° & 110° with pilot sizes ranging from 3/32" to 3/16" . . . . . #CM-1 $2.69

SUPER COMBO MIX A PALLEY BARGAIN PACKAGE! All of the above "mixes" ONLY $12.95

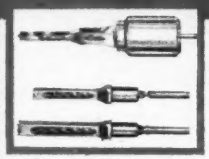
PLEXIGLASS 3/16" x 36" x 24" . . . per sheet
Write for other sizes & prices. Many more in stock. $13.00

NEW CATALOG
10,000 Bargains in War Surplus 92 Page, Illustrated with tables, charts & data. Send 25¢ to cover handling & postage.

New Electric Motors
500A - New 24 Volt motor. CONVERTED TO 110 Volt A.C. Actually delivers a FULL ½ H.P. Comes complete & READY TO RUN!! $8.49

Order from this Ad. All sales final. All prices F.O.B. Los Angeles. Pay by M.O. or Check. P.O.'s Accepted from D & B firms rated D2 or better. ½ deposit required on all C.O.D. orders.

PALLEY SUPPLY COMPANY
6371 SAN FERNANDO RD.
DEPT. MI-11 GLENDALE 1, CALIF



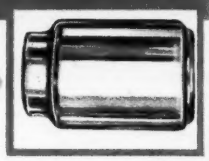
BULL MORTISING KIT

Includes (a) Bull Mortising Adapter made of solid aluminum with double-shield ball bearings and (b) ¼", ⅜" and ½" chisels with corresponding bits. Bull Chisels are made of highest quality steel and are designed specifically for use with ¼" electric drill or drill press. Kit comes complete as pictured above and guaranteed, only **$23.90**

Just chuck it in your drill—and watch the chips fly!

Now you can mortise **on-the-job**, now you can rout **on-the-spot** with the new Bull Mortising Adapter. This amazing new adapter can be attached in either drill or drill press in a matter of seconds, and it gives you a powerful, **portable** tool that really makes the chips fly!

NOTE: Bull Mortising Adapter and Bull Chisels and Bits are designed specifically for use in any ¼" electric drill or any drill press; they should **not** be used with ⅜" or ½" electric drills.



BULL MORTISING ADAPTER

Large end chucks into drill or drill press; small end fits any ⅜" shank chisel **$6.95**

ACCESSORIES FOR BULL MORTISING ADAPTER

CHISELS & BITS: Mortising chisels (¼", ⅜" or ½" with bits), each **$6.00.**
CHISELS ONLY: ¼", ⅜" or ½", without bits, each **$4.00.**
BITS ONLY: to be used with ¼", ⅜" or ½" chisels, each **$2.40.**

Chuck it in your drill—and you're a mighty handy guy!

Famous BULL BUFFER **more than pays for itself** the very first time you make your car, floors, boat, woodwork, furniture gleam like new! More than 100,000 home owners are now polishing and sanding the "Bull Buffer way"—the only easy, comfortable way to reach all surfaces, curved or flat. No skill necessary—anyone can polish like a professional or sand like an expert with Bull Buffer. Fits any drill or flexible shaft. **Exclusive swivel action** makes it easy to get to all those "tight places" other polisher-sanders can't touch. Complete, with sheepskin bonnet and 2 sanding discs, only **$9.95**

ORDER THESE ACCESSORIES FOR YOUR BULL BUFFER

(For use with the Bull Buffer *only*)

5¾" finest quality bark-tan **sheepskin bonnet. $1.25.**

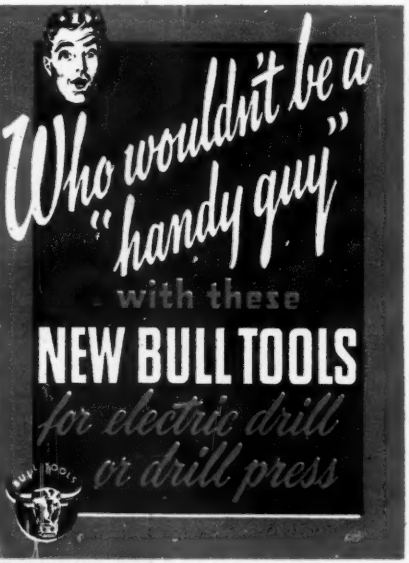
5½" half-inch pile wool pad with rubberized back. Recommended when cleaning compound is used—will not mat down. **$1.35.**

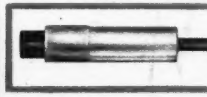
5" aluminum oxide production sanding discs (0000-000-00-0-1-2½-3), **10c** each. **24** open grit, **15c** each.

1½" Jacob hex key chuck. When attached to Bull Buffer, gives you angle-head drilling attachment. Increases ¼" to ½" capacity, provides power for heavy drilling in wood or steel. **$5.00.**

2½" cup wire brush. Easily attached to Bull Buffer head. Removes paint, rust, scale, etc. **right now. $1.75.**

Adapter B set, for high-speed sanding with Bull Buffer. By running Bull Buffer backwards this set **doubles** your drill speed. Complete, **$2.00.**





NEW AUTOMATIC SCREW DRIVER

Now you can get to all those "tight places" and drive screws in **seconds** where it used to take **minutes** by hand! The new Bull Driver fits any electric drill, drill press or flexible shaft. **Automatically** centers on screw groove; **automatically disengages** when screw is firmly home in wood or metal. Three models—take your choice and order today! Any mode **$4.95**

When ordering, specify model in either standard or Phillips.
MODEL A—Self-centering model for driving screws up to a No. 14.
MODEL B—Self-centering model for driving small machine screws.
MODEL C—Without self-centering hood; long blade reaches those extra-deep counter-sunk jobs.

NEW PORTABLE DRUM SANDER USES STANDARD SANDPAPER SHEETS!

Now you can get to all those hard-to-reach places with the new Bull Drum Sander—a **portable** 2" drum sander that fits any electric drill (or drill press). MOST ECONOMICAL drum sander on the market because you cut your own strips out of **ordinary sandpaper sheets** instead of buying costly sanding sleeves! No wedges or screws necessary; new patented feature lets you insert and remove sanding strips at the flick of a finger! Complete ... **$4.95**

NEW! *Four* different holes with *One* HOLE SAW!

Now you can cut 1", 1½", 2", 2½" holes with **one** hole saw—the new Bull Hole Saw that fits any ¼" electric drill or drill press. Cuts cleanly through any ⅜" stock—wood, plastic, or metal. Complete, with arbor and 4 saws **$4.95**

NO FINER GIFTS . . .

For that friend or member of your family who takes pride in being a handy man around the house, there's no finer gift than a guaranteed Bull Tool.

NEW! BULL ECONOMY KIT

Use your drill to polish and sand by direct drive with this low-cost **kit** that includes (a) direct-drive adapter that fits any drill, (b) 5" flexible rubber disc, (c) sheepskin bonnet, (d) 2 sanding discs, all for only ... **$2.25**

AT YOUR DEALER OR SEND CASH, CHECK OR MONEY ORDER FOR PREPAID SHIPMENT, TO

BERTROM U. MFG., COMPANY

3121 Main Street Dealers Write Today Kansas City, Mo.

PRINTED IN U.S.A.

BE A SUCCESS IN

Radio Mechanic For Air Line
I qualify me Radio Me- nited Air- y Radio- Class Li- Hauger, California.

Makes More Money With Own Shop
"Am doing Radio Servicing full time. Have my own shop and am making more money now than I ever did before. Owe this to N.R.I."—Curtis Staeth, Fort Madison, Iowa.

N.R.I. Graduate Doubles Salary
"I am employed by Station WKBO, as transmitter operator. Have more than doubled my salary since starting in Radio full time."—A. A. Herr, New Cumberland, Pa.

Makes $10 Week Extra In Spare Time
"I averaged $10 a week fixing Radios in my spare time. After graduating, managed an electrical store's Radio Department."—M. Joseph, Sacramento, California.

Television Servicing Store
"Today I am considered an expert Radio and Television Technician. I have 4 employees working for me. Radio repair business has doubled."—Paul G. Miller, Toledo, Ohio.

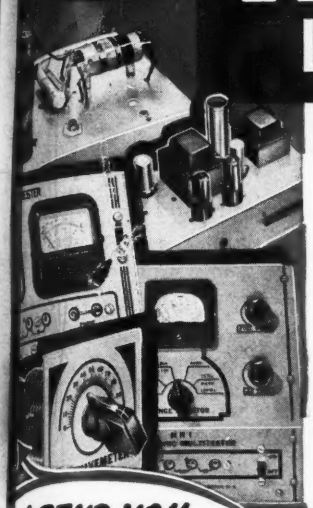
Calls N.R.I. His "Stepping Stone"
"N.R.I. has been my stepping stone from a few hundred to over $4,000 a year as a Radio Engineer. Make extra money servicing Radios."—Alton B. Michaels, Trenton, Ga.

Takes Course

I TRAINED THESE MEN
Read What They Are Doing and Earning

RADIO-TELEVISION

Learn by Practicing at Home in Spare Time



I SEND YOU KITS LIKE THESE FOR PRACTICAL EXPERIENCE

Get a GOOD JOB--Have a BRIGHT FUTURE in America's Fast Growing Industry

Do you want a good pay job in the fast growing RADIO-TELEVISION Industry? Or do you want to have your own money-making Radio-Television Shop? Here is your opportunity. I've trained hundreds of men to be successful Technicians . . . MEN WITH NO PREVIOUS EXPERIENCE. My tested and proved train-at-home method makes learning easy. You learn Radio-Television principles from my illustrated lessons. You get practical experience building, testing and experimenting with MANY KITS OF PARTS I send. All equipment yours to keep.

MAKE EXTRA MONEY IN SPARE TIME

The day you enroll, I start sending you SPECIAL BOOKLETS that show you how to make $5, $10 a week or more EXTRA MONEY fixing neighbors' Radios in spare time while learning. From here, it's a short step to your own shop or a good pay Radio-Television servicing job. Or let me train you for a Federal Communications Commission (FCC) License. Be a Radio-Television operator or Technician.

TELEVISION OFFERS NEW JOBS—MORE JOBS FOR TRAINED MEN

In 1945, there were 943 Radio Stations. Today, about 2700 are on the air! RESULT—THOUSANDS OF QUALIFIED MEN STEPPED INTO GOOD JOBS. Another example—only 19 Television stations were on the air in 1947. Today, more than fifty. Within a few months, 150, say the experts — and 1000 within 3 years. Then add developments in FM, Two Way Radio, Police, Marine, Aviation, Microwave Relay Radio. Think what this means! New jobs, more jobs for qualified men. The man who prepares NOW can reap rich rewards in this changing, developing, fast growing field!

SEE WHAT N.R.I. CAN DO FOR YOU

Act Now! Send for two BOOKS FREE. Actual Lesson on Receiver Servicing and 64-Page Book on winning success in Radio-Television. Cut out and mail postcard. J. E. SMITH, President, Dept. 9MH, National Radio Institute, Pioneer Home Study Radio School, Washington 9, D. C.

Make Extra Money While Learning

Many of my students earn money fixing Radios in their Spare Time while learning, often average $5 to $10 a week. I send you SPECIAL BOOKLETS that show how to do it . . . and I send parts to build a SET TESTER that helps you do it.

FIND OUT ABOUT THIS **TESTED WAY TO BETTER PAY** MAIL NOW!

VETERANS Get This Training WITHOUT COST under G.I. BILL

J. E. SMITH, President National Radio Institute

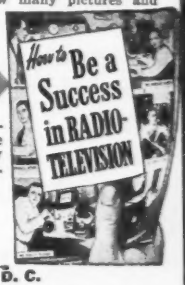
CUT OUT ON DOTTED LINE

Mail this Card to Get 2 BOOKS FREE

ACTUAL LESSON

Send now! This card entitles you to actual lesson, "Getting Acquainted With Receiver Servicing." It shows how many pictures and diagrams are used to make learning at home easier, practical.

64 Pg. BOOK



You also get my 64-Page Book on winning success in RADIO-TELEVISION. It tells more about YOUR opportunities, details of my course, what my graduates are doing, earning.

No Stamp Necessary
We Pay Postage

MR. J. E. SMITH, President, Dept. 9MH
National Radio Institute, Washington 9, D. C.

Mail me Sample Lesson and 64-Page Book, "How to Win Success in RADIO-TELEVISION"—both FREE. (No salesman will call. Please write plainly.)

NAME.....AGE.....

ADDRESS.....

CITY.....ZONE.....STATE.....

☐ Check if Veteran Approved Under G. I. Bill

See other side ➡

Be a RADIO-TELEVISION Technician

TRAIN AT HOME IN SPARE TIME

You learn by practicing with Many Kits I send. You build your own powerful Radio, Set Tester, etc. Make $5, $10 a week EXTRA fixing Radios in spare time while learning. Mail card now, get actual Radio Lesson and 64-page book, "How to Be a Success in RADIO-TELEVISION."

VETERANS GET THIS TRAINING WITHOUT COST UNDER G. I. BILL

CUT OUT AND MAIL THIS CARD NOW

BUSINESS REPLY CARD
NO POSTAGE STAMP NECESSARY IF MAILED IN THE UNITED STATES

4c POSTAGE WILL BE PAID BY
NATIONAL RADIO INSTITUTE
16th and U Sts. N. W.
Dept. 9MH
Washington 9, D. C.

FIRST CLASS
PERMIT No. 20-R
(Sec. 510 P L & R)
WASHINGTON D. C.

Fun for all with these Exciting LIONEL TRAINS

Every member of the family will enjoy LIONEL TRAINS! They are so real, so life-like, so exciting to operate. And *such* fun building model layouts — with Dad a Boys having the time of their lives. Trains are real in everything but size. puff smoke like real trains, and have b remote control whistles. Get the catalo see all the new Lionel Trains and acce for 1949.

See Lionel Trains at your dealer's

Lionel Train sets are priced as l 15.95. Also ask to see new Lionel Co tion Kits for young model builders. T entirely new.

LIONEL TRAINS, P. O. BOX 186
Madison Square Station, New York 10, New York

I enclose 25c for "Special Offer"—including 40-page full-color Lionel Train Catalog, Sound Effects Record, 8 Miniature Billboards, and Railroad Planning Book for "POP".

Name _____

Address _____

City _____ *Zone* _____ *State* _____